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A pre-R year: Is it worth it, and what would it cost?

**An applied policy analysis/critique focused on the
practical, financial and policy implications of
increasing support to the pre-R year in South Africa.**

*Submitted in partial fulfilment of the degree
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List of abbreviations

ABET	Adult Basic Education and Training programmes
CCTs	conditional cash transfers
CPC	Chicago Child-Parent Center (CPC) Preschool Programme
COSATU	Congress of South African Trade Unions
CRC	Convention on the Rights of the Child
CSG	Child Support Grant
DSD	Department of Social Development
DBE	Department of Basic Education
DoE	Department of Education
DoH	Department of Health
ECD	Early Childhood Development
EC	Eastern Cape province
ECCE	Early Childhood Care and Education
ECLS-K	Early Childhood Longitudinal Study-Kindergarten cohort
EFA	Education for All
EPWP	Expanded Public Works Programme
GER	Gross Enrolment Rate
GHS	General Household Survey
HEI	Higher Education Institution
HFA	height-for-age
KIDS	KwaZulu-Natal Income Dynamics Study
LFS	Labour Force Survey

LMICs	Low and Middle Income Countries
NCS	National Curriculum Standards
MTSF	Medium Term Strategic Framework
MEC	Member of the Executive Council
MDG (s)	Millennium Development Goal(s)
NSNP	National School Nutrition Programme
NSSF	National Norms and Standards for School Funding
NIDS	National Income Dynamics Survey
NIP	National Integrated Plan
NIP for ECD	National Integrated Plan for Early Childhood Development
NGO	Non-governmental organisation
NPO	Not-for-profit organisation
OECD	Organisation for Economic Cooperation and Development
PED(s)	Provincial Education Department(s)
PETS	Public Expenditure Tracking Survey
pcGDP	per capita GDP
PIRLS	Progress in International Reading Literacy
pre-K	pre-Kindergarten
pre-R	pre-Grade R
PTR	Pupil-Teacher Ratio
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Education Quality
SADTU	South African Democratic Teachers' Union
SAIMDC	South African Index of Multiple Deprivation for Children
SES	socioeconomic status

sd	standard deviations
SA	South Africa
SGB(s)	School Governing Body (ies)
SSA	sub Saharan African
TIMSS	Trends in Mathematics and Science Studies
UNESCO	United Nations Education and Science Organisation
UNICEF	United Nations Children's Fund
USA	United States of America
US	United States (of America)
UK	United Kingdom
WC	Western Cape province
WCED	Western Cape Education Department
WP5	White Paper 5 on Early Childhood Development

Introduction

Science is unequivocal in its support for the importance of early childhood development. Calls for increased investment in young children cite neuroscience, developmental psychology and health. It is hazardous, however, to make a direct leap from neuroscience to policy recommendations. Simply because early childhood provides opportunities for more economically efficient interventions which have dramatic impact on inequality, this does not mean that the ECD policies actually implemented by communities, provinces, or national government are worthy investments. Firstly, it is difficult to design programmes that improve children's cognitive or behavioural development. Secondly, the costs of even effective programmes might outweigh the benefits they generate for children, their families, and taxpayers. And finally, programmes in early childhood require upfront and politically brave investments that may take decades to pay off.

Nationally the field of early childhood learning¹ is characterised by remarkably little data, and even amongst quasi-programme evaluations, there is limited focus on child outcomes. From an economist's perspective, it is therefore challenging to make and build the economic case for increased investment in the Pre-R year based solely on the benefit side of the equation. As a result, this dissertation looks carefully at the cost side of the equation: the financial implications of a phased national scale-up of centre-based support for a pre-R year, focused on 4 year olds,² within a cost per child and per model framework.

What is the argument for state investment?

Parents, extended families and their communities are, and should remain, the primary source of care and stimulation for the young child. However, there are compelling reasons why the state should become involved. The first is its role as duty bearer for the rights of children. South Africa has signed up to the Convention on the Rights of the Child (CRC), has drafted a progressive and respected Constitution, and has thus assumed responsibility for protecting and realising children's rights. The known benefits of quality ECD services for

¹ Early learning opportunities require the following elements: cognitive and language stimulation; early literacy & numeracy development; mediated group social experiences; nutrition support; basic companionship and psychosocial support.

² For simplicity, children eligible for the pre-R year are assumed to be 4 years old throughout this thesis. In practice, they may well be almost 4 years old, or already 5 years old but too young for Grade R.

children's growth, health, cognitive performance, and personal and social wellbeing justify its provision by the state from a human rights perspective.

Secondly, early learning opportunities are central to the attainment of the Education for All (EFA) goals,³ the Millennium Development Goals (MDGs),⁴ and national educational and economic growth goals. For all of these goals, the evidence is clear that early learning programmes in the early years facilitate and underpin progress in educational attainment.

Thirdly, the pervasive effects of poverty, HIV/AIDS and information failures impede the ability of parents and communities to provide the care and stimulation necessary for young children. In addition, the 2001 Nationwide Audit of ECD Provisioning in South Africa confirmed the lasting effects of apartheid's policies of racial, social and economic discrimination on ECD provisioning (University of Pretoria, 2007). To the extent possible, this means the responsibility must revert to the state to guarantee the protection of children's rights to care, stimulation and safety.

Fourthly, labour markets are slowly evolving and changing in the country. These changes may mean that women and mothers, more often the primary caregivers, are no longer able to combine childcare with their economically productive roles.

Fifthly, there is substantial evidence (discussed in Chapter Two) that demonstrates that investment in early childhood provides a low-risk, high return investment that pays off handsomely in human capital development. Early learning programmes and interventions **allow children to grow in a way that cannot be diminished or eroded by an uncertain future** (Hyde, 2006). Child development is a cumulative process and, as a result, investments at younger ages tend to generate higher returns than later investments. Missing the opportunity to invest in ECD, therefore, can lead to significant losses.

The 2012 Diagnostic Review⁵ emphasised the need for large-scale coordinated intervention in the ECD arena (Richter et al., 2012). There are two broad options under which these potential interventions could be classified, both of which require significant investment:

1. Expand access to ECD facilities and infrastructure
2. Improve the range and quality of existing ECD services and infrastructure

³ The first EFA goal is *"Expanding and improving comprehensive early childhood care and education especially for the most vulnerable and disadvantaged children..."*

⁴ The MDG goals call for universal access to, and completion of, free primary education, and enhancing the quality of education.

⁵ In preparation for the review and revision of the National Integrated Plan for Early Child Development 2005-2010 (NIP), the Department for Performance Monitoring and Evaluation in the Presidency and the Inter-Governmental Steering Committee on Early Childhood Development commissioned a Diagnostic Review of the prevailing ECD paradigm, current services, human resources, funding and impact.

If government's priority is to expand access to ECD centres, and ensure that all 4 year old children are able to access such centres should they so wish, the literature search should focus on whether access to ECD centres has any impact on child outcomes. However, government may not be concerned with increased access, but rather with trying to improve child outcomes through targeted and specific interventions within existing services (Burns, 2007). Here an analysis of the impacts of such a strategy on inequality is appropriate, given the reach of current provision. These two options are ultimately intertwined, since access alone may not be sufficient to yield positive child outcomes, but rather, what matters is access to high quality ECD centres (Britto, Yoshikawa, & Boller, 2011).

Expanding access to ECD services can be achieved through one of two ways. The first is to expand the number of available places by investing in new ECD centres: a supply-side approach. This would be plausible if the evidence suggested that current facilities were over-subscribed.⁶ In developing countries, there is evidence that the availability and expansion of schooling infrastructure correlates positively with school enrolment (Galiani & Berlinski, 2005). In the Argentinian preschool expansion programme, research findings could not reject the null hypothesis of a full take-up of newly constructed places. The South African Grade R expansion was similarly a supply-driven intervention.

However in developing countries, a lack of demand stemming from information failures, especially among the poor, may also be the reason behind low preschool enrolment. An alternative approach to promote investment in human development would be suitable if the evidence suggested that existing services were under-utilised, and that liquidity constraints were what prevented households from accessing these services (Burns, 2007). The demand for such services can be stimulated through welfare transfers to poor households through cash transfers, or subsidised services, the idea being that part of the additional income will be spent on human capital investment. However, there is evidence that poor households do not always spend their additional income in this way (Pauw & Mncube, 2007).⁷

Economic theory suggests that if public goods are not subsidised, they will be underprovided because families are unlikely to consider the benefits to others when deciding how much to

⁶The 2001 Audit provided no way to gauge the extent to which services were over-subscribed. However the calculated practitioner: learner ratios suggest that services were in high demand (ratios ranged from 1:16 in Gauteng to 1:24 in the Northern and Eastern Cape) (Burns, 2007).

⁷ For this reason, conditional cash transfers (CCTs) have become popular in recent years. In South Africa, the only initiative that can be used as a 'proxy case study' for a CCT linked to school attendance and performance is the National School Nutrition Programme (NSNP) of the Department of Education. The evidence suggests that daily delivery of a school meal may encourage consistent school attendance. The programme addresses both the problems of school attendance and health deficiencies among children, and is possibly easier to administer than a large-scale CCT programme targeted at poor households (Pauw & Mncube, 2007).

invest in their children's early development, leading to lower than optimal social investments. While preschool itself is not a public good, it most definitely creates additional individual and social externalities that accrue over the longer term, thereby justifying state intervention.⁸ Although ECD services have the potential to generate high returns for individuals, families and society at large, public and private investments in this sector in South Africa remain relatively low.⁹

So if active state involvement is accepted as a requirement for progress, the question then moves to what branch of government should take the responsibility? Are the early learning opportunities of the country's children a welfare assignment or an education priority?

The importance of early learning interventions for the education sector

Schools work with what families give them. The famous 1966 Coleman Report on inequality in school achievement, and a vast subsequent literature, clearly document that the major factor explaining the variation in the academic performance of children across U.S. schools is the variation in parental environments, not the variation in per pupil expenditure or pupil-teacher ratios. Successful schools build on the efforts of successful families. Failed schools deal in large part with children from dysfunctional families that do not provide the enriched home environments enjoyed by wealthier children (Heckman & Masterov, 2007).

The developmental trajectory of most children appears to be well established at school entry: schooling simply reinforces the emerging developmental trends and usually widens the gap between good and poor pupils. The developmental window of opportunity for rapid language learning is most widely open **before** children enter school: language levels at age 3 accurately predict those at age 10 (Gertsch, 2009). A South African study tracking literacy levels from Grades R to 3 found that language delays remained stable across this period, suggesting that the education received was not powerful enough to make a significant difference to an already entrenched problem (Umalusi, CEPD, & University of the Witwatersrand, 2010). Almond and Currie (2010) summarise seven longitudinal studies from the USA and UK which suggest that characteristics that are measured as young as age 7, can explain a great deal of the variation in educational attainment, earnings and the probability of employment in later life.

⁸ Archer (1994) describes it as a private good with inherent public benefits or degrees of publicness.

⁹ The total DSD budget for per-child provider subsidies, transfers to NPOs, the EPWP, and other programme support, is estimated at around R1.2 billion per annum. There is a large and increasing budget for the CSG, of which about R1 billion per annum is paid to children under 6 years of age. The total DBE budget is roughly R3.3 billion per annum for the provision of Grade R (Richter et al., 2012). These total investments are found to be small when benchmarked against international standards in Chapter Four.

Children who live in poverty tend to have less verbal interaction and begin school with fewer linguistic skills than peers from higher income groups. Yet the relationship between socioeconomic status and learning outcomes is not straightforward. It is the home learning environment, rather than socioeconomic status, which has most effect; in other words, what parents do¹⁰ with their children is more important than who parents are. It is well documented that caregivers can get children off to a good start even in difficult situations¹¹ (Gertsch, 2009).

Opportunities for literacy development through exposure to reading, pictures and mediated explanations of text are especially important during this period (Richter, Dawes, & Kadt, 2007) because deprivation in this area is the primary mechanism by which low income leads to underachievement (Dearing, McCartney, & Taylor, 2009). Interventions in low socio-economic contexts can make a difference to children's letter knowledge, and this has an impact on levels of early word reading and spelling (O'Carroll, 2011). Emergent literacy during the preschool period, including the ability to manipulate phonemes and to recognise letters and letter sounds, predicts later reading achievement. Similarly, emergent numeracy skills in preschool, including counting, number knowledge, estimation, and number pattern facility, predict later mathematical competence (Duncan, Dowsett, et al., 2007; Welsh, Nix, Blair, Bierman, & Nelson, 2011). A US national longitudinal analysis, the Family and Child Experiences Study (FACES), indicated that economically disadvantaged children may know only one to two letters of the alphabet upon entering kindergarten, even as middle-class children know all 26 letters. Starting behind they'll stay behind. This is the well-known Mathew Effect, as lifted from the biblical passage (Neumann, 2009).

School readiness involves a range of competencies as children are required to complete independent work, adhere to strict time schedule, and to acquire basic literacy and maths skills for the first time (Richter et al., 2012).¹² Understanding which skills are linked to children's academic achievement has important implications for early education

¹⁰ Practices such as reading to children, storytelling, singing, or reciting rhymes and riddles all promote language.

¹¹ It is important to note that only a minority of young children exposed to poverty and adversity develop discernible physical, mental and social problems. Resilience is achieved through the supportive factors that enable these children to remain developmentally on track with their more advantaged peers. Long-term follow-up studies of disadvantaged children have identified three types of resilience-promoting experiences. These are: 1) warm and supportive family relationships, 2) stability and security at home and in the community, and 3) expectations, opportunities and encouragement to participate and succeed in some area of their lives (Richter et al., 2012).

¹² For children aged three to five years, Dawes, Bray and van der Merwe (2007) recommend the following indicators as good predictors of child outcomes and well-being: age-appropriate fine motor skills, appropriate social behaviours with adults and peers (linked to socialisation, self-esteem, confidence, and self-regulation), age-appropriate participation, interest in or a positive approach to learning, early numeracy skills and language and literacy development.

programmes. Using 6 longitudinal data sets, Duncan and colleagues (2007) estimate links between three key elements of school readiness (academic, attention, and socioemotional skills) and later school reading and maths achievement. Their analysis provides a clear answer that maths¹³ and reading skills at the point of school entry are consistently associated with higher levels of academic performance in later grades. Among attention-related and socioemotional behaviours, only the attention-related skills predicted later academic achievement with any consistency.¹⁴

So while good schools can go a long way toward helping poor children achieve better, the fact remains that educational inequality is rooted in economic problems and social pathologies too deep to be overcome by school alone. ECD is not the 'magic bullet.' Yet it is recognised that ECD is 'a powerful equaliser,' because assistance is provided during a time when children are most able to make up for disadvantages carried over to them from previous generations.

One final observation of the importance of the economic and human capital arguments is appropriate. Yoshikawa et al (2007) provided an interesting insight into the dramatic Mexican preschool expansion programme: the discourse of efficiency and cost-effectiveness appealed most to the institutions that needed to be 'brought on board' to give reliable, long-term support. Dawes et al (2007) support this reflection by providing a South African example: funds for the expanded malaria control programme were ultimately made available out of concern for economic development, rather than from concern regarding children's right to health.

At times the hard-won child rights agenda can stymie negotiation amongst competing claims to state resources. Where does one stop when faced with obligations to full realisation of substantive rights, which require maximising education opportunities without constraint, because of the pressure of moral ransom (Archer 1995)? A rights-based approach carries with it the corollary that if a child's rights have not been met, then someone is to blame, and the individual or institution can be charged through the judicial system. This has advantages, particularly in cases of abuse and deliberate exploitation of children. Dawes et al (2007) report however, that in the context of homes and families in desperate circumstances,

¹³ Particularly impressive is the predictive power of early maths skills (Duncan, Dowsett, et al., 2007).

¹⁴ There appears some tension in the literature on this issue. On the one hand, this evidence suggests that pre-kindergarten programmes for children from low-income homes might reduce school readiness disparities most effectively by focusing more time on direct instruction in these specific domains (Duncan, et al., 2007). On the other hand, developmental research suggests that it's the mental processes that support effective, goal-oriented approaches to learning, particularly working memory and attention control, that are important (Welsh et al., 2011).

children's rights are disregarded through a lack of resources or through limited understanding. Child rights indicators will cease to be effective if parents and caregivers feel threatened and blamed when they are doing the best they can under the circumstances (Dawes et al., 2007). Similarly, government officials are not known to positively respond to accusations of inadequacy in their responses to the very real challenges facing the country. The stick side of the argument is effective in some circumstances: this dissertation focuses on the carrot side of the argument in the belief that the human capital argument may be more powerful when the aim is to attract NEW investment into a neglected field.

Dissertation outline

This dissertation aims to examine options to increase the investment in young children in order to better leverage South Africa's considerable later outlays in education and health. Given tight resource constraints, it is critical to ensure that any increased spending is appropriately directed. This requires a good understanding of the current level of service provision and the impact of early learning programmes on young children. Chapter One reviews the international and domestic economic evidence base pertaining to early learning investments focused on 4 year olds. Convincing and solid, the evidence highlights the importance of early learning investments for future learning success, the potential it holds to address some of South Africa's intractable inequalities, and the capacity preschool has to have meaningful impact at scale in developing countries.

Chapter Two then provides a realistic picture of the challenges facing South African children. By the time children reach Grade R their learning capacity may have already been significantly compromised by preventable health conditions, unsupportive home environments, and pervasive poverty. While appreciably supported by government grants, very few children are exposed to any sort of early learning opportunities, nor does the current institutional bureaucracy support increased provision of early learning opportunities.

To expand the rationality of the economic case, the country's capacity and appetite for increased investment, as revealed by the past decade's Grade R scale-up, is examined in Chapter Three. Here some key reflections are highlighted: the tensions between community and public modes of delivery, the difficulties national government has in ensuring that its policies meet their intended goals given its reliance on provincial implementation, and the mechanisms by which quality provision is compromised in a scale up process focused on speed and practitioner priorities. While recognising the pitfalls, Grade R has had some undeniable successes which could be replicated.

The dissertation finally explores the costing of quality centre-based programmes in Chapter Four, and looks at the financial and timing implications for scale up. It explicitly models the cost of state investment of a pre-R year under various scenarios, and finds a modest price tag attached. In exploring different financing models which facilitate the scale up of delivery, the dissertation provides a targeted examination of the country's responsibilities and potential response to developing the promise of these children in a coherent and practical way.

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Chapter One

Making the case for early learning: the evidence behind the pre-R model

Introduction

There is recognition that the first few years of a child's life are a particularly sensitive period in the process of development, laying a foundation for cognitive functioning, behavioral, social and self-regulatory capacities, and physical health. Early determinants, together with relatively constant material conditions over the course of childhood and adolescence, tend to reinforce each other (Richter et al., 2012). Interventions in the early days have the potential to shift these trajectories.

However, the studies that are the basis for this consensus vary in method, population, type of intervention (nutrition, education, parenting education, income supplementation), and type of outcome measured (anthropometric, cognitive, behavioural, school readiness), with some outcomes being short-term and some long-term (Nores & Barnett, 2010). Thus while there is increasing agreement about the importance of intervening to improve early development paths, there is less agreement about the most effective and efficient ways to do so.

The scientific knowledge base guiding early childhood policies and programmes is constrained by the relatively limited availability of systematic and rigorous evaluations of programme implementation; there are gaps in the documentation of causal relations between specific interventions, specific outcomes and of the underlying mechanisms of change; and infrequent assessments of programme costs and benefits (Shonkoff & Phillips, 2000). Beyond the child health domain, information on programme effectiveness and efficacy in developing country contexts is limited, and there is hardly any data from South Africa (Dawes, Biersteker, & Irvine, 2008). The sheer variety across programmes means that there is no consistent body of evidence based on a common set of intervention modalities. There are, however, three key stylised facts from this literature that should be highlighted upfront:

- (1) family income matters, in the sense that children are not able to purchase a favourable family environment;

- (2) it is possible to intervene effectively and to improve the trajectories of young children
- (3) the later the remediation, the less effective it is.

This chapter will be organised around the two themes that form the basis of the arguments for increased public investment in early learning interventions:

1. **Educational efficiency:** Early learning programmes increase the efficiency, effectiveness and equity of school expenditures by reducing drop-out, repetition and the need for remedial support.
2. **Economic efficiency:** The early years are the most cost-effective period in the child's life in which to invest. Events in the early years of a child's life influence the child's productivity and learning ability throughout life.

These themes are interdependent: the argument for economic gains largely comes from the educational efficiencies. And while the arguments apply just as well to the non-educational aspects of ECD, this thesis focuses solely on the evidence surrounding early learning to build the rationale for new investment. As Biersteker (2010:23) points out, it's the education route in South Africa that '*has so far proved to be the most effective channel for expanding ECD services.*' The chapter will start by examining the theoretical case underlying these two themes.

The theoretical case behind early childhood investments

The last decade has seen a blossoming of research across a range of disciplines into the long term effects of early childhood conditions. In economics, the focus is on how human capital accumulation responds to the early childhood environment. A few relatively small studies from developed economies, most noteworthy programmes in the United States, carry a large weight in the literature. This section seeks to set out what economists have learned about the importance of early childhood influences on later life outcomes, the age patterns of skills formation, ameliorating the effects of negative influences, and responses to interventions.

First, consider a simple theoretical model that outlines why investments in early learning may pay off. Cunha, Heckman and Masterov (2005) developed a model of human skill formation with a number of important insights.

Firstly, **abilities matter**. A large number of empirical studies document that both cognitive and non-cognitive abilities¹⁵ are powerful determinants of wages, schooling, participation in crime, and success in many aspects of social and economic life (Heckman, 2007). Pure cognitive abilities include IQ. Noncognitive abilities include qualities such as patience, self-control, temperament, time preference, perseverance, motivation, risk aversion, self-esteem, self-control. Abilities are shaped by genetic components and environmental influences, and are multidimensional rather than unidimensional. The influence of parents is particularly important.

Secondly, **ability formation is governed by a multistage technology**. Some abilities can be produced more effectively at a given period in life, referred to as “sensitive” periods. Other abilities can only be produced at a particular period referred to as “critical” periods. “Sensitive” and “critical” periods mean that remediation of some abilities not acquired in early childhood is impossible or prohibitively costly later. In the extreme case of a Leontieff technology, investments in skill formation during the school or post-school periods are only productive if a sufficiently high level of investment was made earlier on. Ability gaps between individuals and across socioeconomic groups open up at early ages, for both cognitive and noncognitive skills.

Thirdly, **there is “self-productivity” in skill formation**. Skills acquired in one period persist into the next period, and skills acquired in one dimension (for example, self-control) may make it easier for a person to acquire skills in another dimension (for example, cognitive learning). Self-productivity embodies the idea that capabilities are self-reinforcing and cross-fertilising and that the effects of investment persist. For example, emotional security fosters child exploration which in turn fosters more vigorous learning of cognitive skills. A higher stock of cognitive skill in one period raises the stock of next period’s cognitive skills. Higher levels of self-regulation and conscientiousness reduce health risks and avoid accidents. Higher levels of health promote learning.

Fourthly, **there is “complementarity” of skills**, such that skills and capabilities acquired in one period increase the productivity of investments at later ages. In a multistage technology, complementarity implies that levels of investments in capabilities at different ages bolster each other. They are synergistic. Complementarity also implies that early investment should

¹⁵ The neglect of noncognitive skills in analyses of earnings, schooling, and other life outcomes is in part due to the lack of any reliable means of measuring them. There is no single, identified, dominant factor for noncognitive skills that is equivalent to the psychometricians’ “g,” or general intelligence. Indeed, it is unlikely that one will ever be found, given the diversity of character traits that fall into the category of noncognitive skills (Blakeslee, J (ed), 2005). In addition, some feel that the skill categories of “cognitive” and “non-cognitive” used by many economists are both too simplistic and inaccurate (Duncan & Magnuson, 2009).

be followed up by later investment in order for the early investment to be productive. If it is not followed up by later investment, its effect at later ages is lessened.

Finally, as a result of “self-productivity” and “complementarity”, it is argued that investments at early ages can have **important multiplier effects**. These are the mechanisms through which skills beget skills (Heckman, 2007).

These features of the technology of capability formation have consequences for the design and evaluation of public policies. Investing in disadvantaged young children is a public policy with no equity-efficiency trade-off (Heckman & Masterov, 2007). It convincingly reduces the inequality associated with the accident of birth, and at the same time raises the productivity of society at large. Dynamic complementarity and self-productivity imply an equity-efficiency trade-off for late child investments but not for early investments: the returns to late childhood investment and remediation for young adolescents from disadvantaged backgrounds are low, while the returns to early investment in children from disadvantaged environments are high (Heckman, 2007).

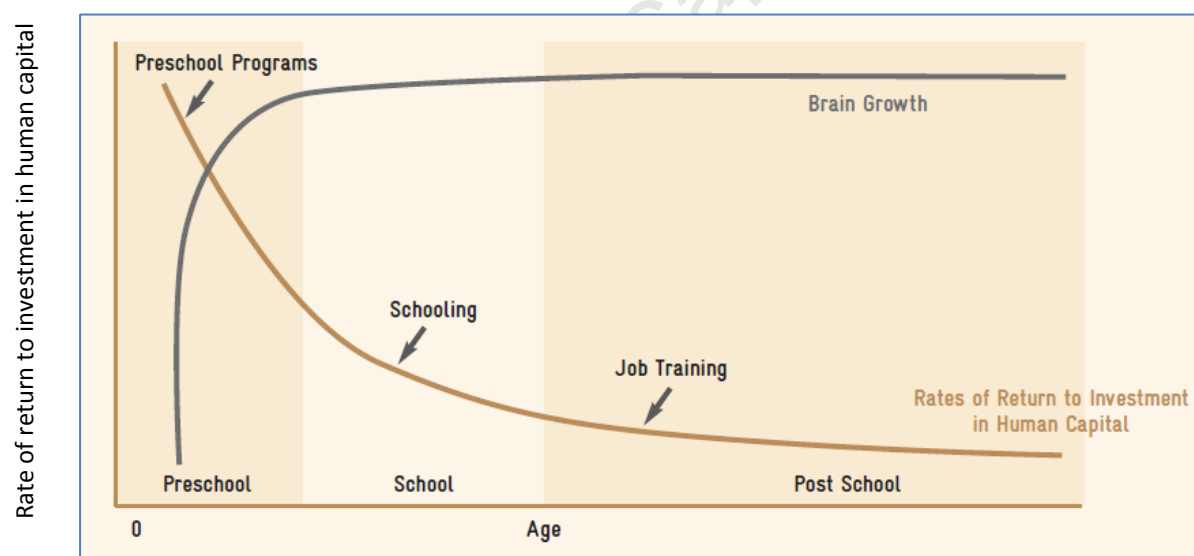
Nobel Laureate, James Heckman and his colleagues, provide extensive theoretical and empirical proof for the benefits of ECD. They have been researching government spending on human capital programmes since the 1990s to establish empirical proof that public investment in quality early childhood programmes can pay for itself through gains in efficiency and productivity over a lifetime. They have found, inter alia, a large low-skilled work force in the USA, unable to capitalise on rising wage premia, who perpetuate their adverse childhood environments which in turn leads to disadvantages for children and a continuation of the cycle of poverty. Human capital – that is, education and skills – determines productivity. They claim that investing early in building individual human capital can yield exponential and sustainable benefits to both the individual as well as society.

Heckman uses cost-benefit analysis to determine the types of human capital programmes, from job training, tax reform, higher education subsidies, and early intervention programmes, that produce the most benefits and savings to society. He concludes that returns on investment are greatest for the young for two reasons:

- (1) younger persons have a longer horizon over which to recoup the fruits of their investments, and
- (2) “*skill begets skill*.” Thus the phenomenon reported in Chetty et al (2010), and quoted by many, that early education programmes lead to improved cognitive scores that last for only a few years is still attenuated by the fact that learning is cumulative: even a temporary gain in cognitive ability will lead to increased learning.

Reproduced below, Carneiro and Heckman (2003)'s famous curve depicting the rate of return to investment across the life cycle is combined with the patterns of brain growth (Bruner et al. 2005) as presented by Gerstch (2009). Figure 1 diagrams Heckman's argument, plotting the rate of return to human capital at different stages in the life cycle. Age, the horizontal axis, is a surrogate for a person's position in the life cycle. The vertical axis represents the rate of return on investment at each age, under the benchmark that the same amount of investment is made at each age. All else being equal, the return on a dollar of investment made when a person is young, is higher than the return on the same dollar amount made at a later age. For some skills, the window of opportunity for full development is in the first three years of life (Shonkoff and Phillips 2000); other abilities, specifically noncognitive skills, may be relatively malleable later during adolescence (Carneiro & Heckman, 2003).¹⁶

Figure 1: Brain growth and Rates of Return to Human Capital Investment, initially setting investment to be equal across all ages



Empirical evidence from benefit cost analyses

This human capital model of early childhood, with its advocacy based on cost-benefit analysis, is now strongly expressed within international ECD policy initiatives, notably by the World Bank. Some caution that this is a persuasive but high-risk strategy, raising expectations for ECD policies that are unlikely to be realised in practice, even within well-

¹⁶ To the degree that this is the case, the preschool period is sensitive, but not the only means to close ability gaps (Alderman & Vegas, 2011).

resourced large-scale programmes, and particularly within impoverished communities (Woodhead, 2006; Dawes, Biersteker, & Hendricks, 2011). Nonetheless the literature provides strong evidence that early childhood interventions in resource-rich countries render benefits far exceeding their investment costs, and that these benefits endure well into adulthood (Reynolds, Temple, Ou, Arteaga, & White, 2011; Nores & Barnett, 2010).

The economic benefits of education are usually measured in terms of adult outcomes, which are often specified in earnings functions or wage equations, as functions of years of schooling. Schooling predicts adult productivity and income, and studies from 51 countries show that each year of schooling increases wages by almost 10% on average (Psacharopoulos & Patrinos, 2004). However this concavity of returns of conventional human capital theory is not supported by available evidence in South Africa. A strong convex relationship between education and earnings is rather seen in this country, with an extremely high marginal rate of return for tertiary levels of education, and small rate of return (approaching zero) for lower levels of education (Keswell & Poswell, 2004). Nonetheless, it is more generally accepted that the nonpecuniary benefits of education, including improved health, reduced fertility, stronger citizenship, less criminality, and an improved ability to care for children are outcomes of both early and general educational investment (Alderman & Vegas, 2011). What makes the case for educational intervention specifically during early childhood so compelling is not only the direct benefits to the child, but also the positive externalities as manifest through reduced welfare dependence and a reduction in the intergenerational transmission of poverty (Burns, 2007): there is no equity-efficiency trade-off.

There are many considerations when estimating reliable benefit-to-cost ratios, such as measuring *all* benefits and costs in monetary terms, assessing diverse resource costs, and balancing between immediate gains versus long-term benefits. The largest benefit-cost ratios are associated with programmes with longer-term follow-up, because they allow measurement of outcomes such as educational attainment, delinquency and crime, earnings, and other outcomes at older ages that most readily translate into monetary benefits. These studies not only demonstrate that the benefits from early interventions can be long-lasting, they also give more confidence that the savings the programmes generate can be substantial (Karoly, Kilburn, & Cannon, 2005). Programmes with evaluations that have followed children only until school entry, or a few years beyond, typically do not measure those outcomes that are likely to be associated with the largest monetary benefits. Because not all benefits can be translated into monetary values, benefit-cost estimates for effective ECD programmes are likely to be conservative. In addition to this, it is easier to make the argument for investment in ECD than it is to determine which aspects of ECD to

prioritise, for example, health, psychological wellbeing, educational readiness and civic mindedness. Unless ECD is defined by a single outcome measure, interventions cannot be ranked according to their efficiency at producing that outcome. Children's development benefits from many types of interventions, such as clean water, access to reading materials, etc., and their complementarity is important; this makes cost-benefit analyses challenging (Richter et al., 2012).

There are two types of quantitative studies about ECD drawn from a very limited number of studies carried out in the USA. One set of studies uses data on high cost, high quality, pilot (model) preschool programmes and provides "laboratory" evidence of the possible returns to investments in early childhood. The other set of studies use data on larger scale programmes¹⁷ such as the US Head Start preschool programme¹⁸ (Heckman & Raut, 2009), and the Chicago Child-Parent Center (CPC) Education Programme¹⁹ (Reynolds et al., 2011).

Two studies of model programmes stand out because they randomly assigned children to treatment and control groups, had low dropout rates, and followed children over many years: the Carolina Abecedarian Project²⁰ and the High Scope/Perry Preschool Project.²¹ These two well-known projects selected participants on the basis of low IQ ratings.²² The Abecedarian mothers were referred by welfare agencies. In addition, 98% of participants of both studies came from African American families. This conflation of low income with low IQ and welfare referrals, and the targeting of ethnic minority groups, raises questions about the generalisability and relevance of the results (Penn, 2004). These two key studies were also high quality interventions, with strong programmes and low adult child ratios of between 1:4 or 1:10 depending on the age of the child. The Perry Project had a particular and well developed, part time, educational programme for four year olds plus home visiting. Despite these considerable limitations of context and scale,²³ these two programmes are very widely cited in the literature (Penn, 2004).

¹⁷ The UK Sure Start programme is another large scale ECD intervention. The difficulty in addressing the question of whether or not Sure Start is effective is because of the huge variety of programmes offered across the areas within which Sure Start is implemented: there is no such thing as Sure Start in the sense of a defined programme with a definable intervention strategy (Dawes, Biersteker, & Irvine, 2008).

¹⁸ A relatively large scale and sustained programme, funded by the Federal government, and available to the children whose parents earn incomes below the poverty line.

¹⁹ The second oldest (after Head Start) federally funded early childhood programme, implemented in Chicago Public Schools since 1967 to the present.

²⁰ Which ran from 1972-1985

²¹ Which ran from 1962 to 1967

²² Children's IQs of between 75-85 for the Perry project, and mothers' IQs of 85 for the Abecedarian.

²³ The Perry High Scope had 68 participants, half of whom attended the trial programme; the Abecedarian had 112 participants, half of whom attended the trial programme.

More recent estimates of benefit-to-cost ratios for ECD interventions yield ratios substantially above 1 both in developing and developed countries. For example in Bolivia, the benefit of a 5% increase in cognitive scores and a 2% increase in height translated into a benefit of between \$1.8 and \$3.66 per dollar of project cost (Engle, et al., 2007). Each dollar spent on the High Scope/Perry Preschool Project has been estimated to have saved up to seven dollars in social costs²⁴ (Almond & Currie, 2010). In a reanalysis of the Perry data, Heckman and others conclude that rates of return are 7% to 10% for males and females, which are smaller than other estimates that have been reported, but still economically significant (Almond & Currie, 2010). The estimates from developing countries of the economic returns of schooling suggest that preschool participation contributes to increases of around 5–10% in lifetime labour income (Engle, et al., 2007).

US data also suggests that returns decline more or less continuously as income rises, and the average return for the middle class could be half of that for children in poverty (Barnett & Ackerman, 2006). Yet accessing quality ECD is a problem that affects more than just low-income families; middle-class children can also benefit from quality ECD. For example, an evaluation of Oklahoma's universal preschool programme (pre-K) for 4-year olds, which is run through public schools, serves children from all SES backgrounds, and is considered a high quality programme, found substantial benefits²⁵ across all participants. The evidence indicates that this programme yields the largest gains for children in lower-income families, but that gains for children who are not poor can still be quite substantial (Barnett & Ackerman, 2006).

In a comprehensive review of evidence on the effects and cost-effectiveness of programmes and services for children from ages 3 to 9, Reynolds and Temple (2008) made two clear points. Firstly they noted that many programmes have assessed long-term effects into adulthood. Three-quarters of the reviews reported effects at five or more years after the end of participation. This is considered rare for social programmes and indicates that lifetime impacts on economic benefits can be accurately assessed. Secondly, the accumulated evidence includes both the model programmes, developed for research demonstration, and the large-scale programmes, developed for routine implementation by schools and other institutions, described earlier. Consequently, the generalisability of the evidence for policy recommendations is much stronger today than a decade ago.

²⁴ This high benefit-cost ratio is driven largely by the effect of the intervention on crime reduction.

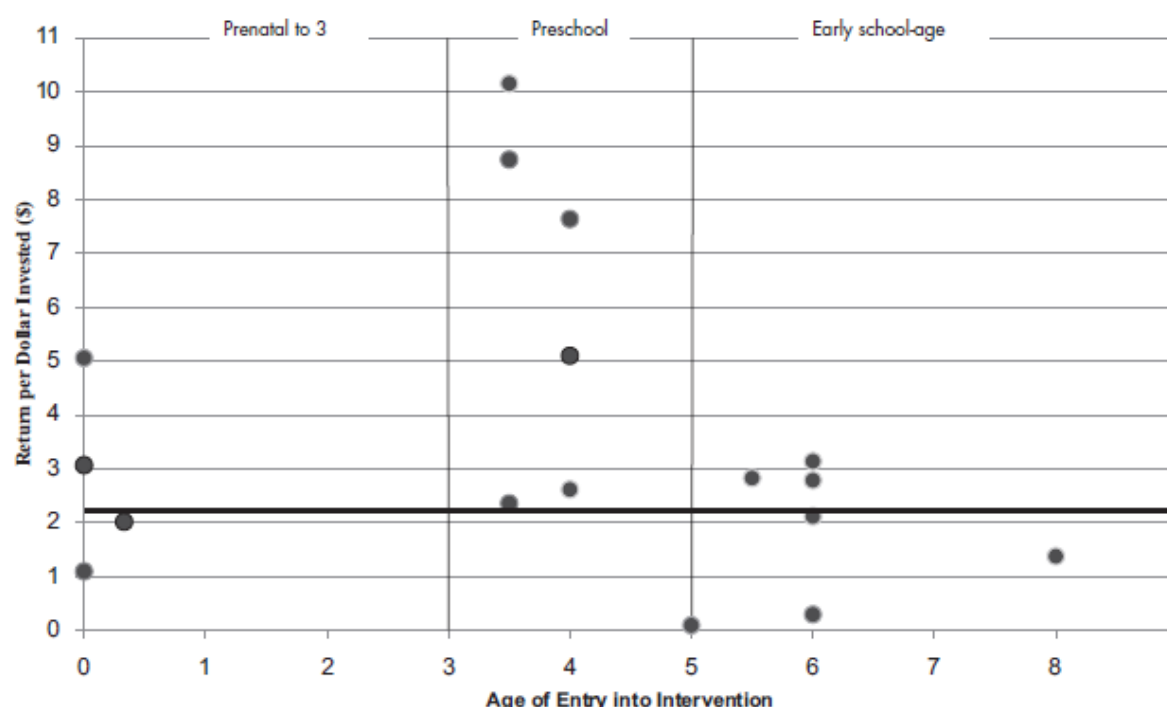
²⁵ Including a .80 standard deviation gain in pre-reading and reading skills, a .65 standard deviation gain in pre-writing and spelling skills, and a .38 standard deviation gain in early math reasoning and problem-solving abilities.

Evidence on the effectiveness and cost-effectiveness of preschool programmes for school readiness, school achievement, and long-term life course development is also reviewed by Reynolds and Temple (2008). The review found relatively large and enduring effects on school achievement and child well-being, with high-quality programmes for children at risk producing strong economic returns ranging from about \$4 per dollar invested to over \$10 per dollar invested. Interestingly, relative to half-day kindergarten, the positive effects of full-day kindergarten were found to be relatively small and generally did not last for more than a year. In summary, findings of the evaluations consistently show positive and meaningful effects for both universal and targeted programmes.²⁶ Although effects sizes are smaller than for intensive preschool programmes, the reach of the state-funded programmes is greater (Reynolds & Temple, 2008). Considering all societal benefits (budget savings, justice system and child welfare savings, and increased earnings), the long-range annual benefit per tax dollar invested was estimated at \$12.10 for a targeted programme and \$8.20 for a universal access programme (Reynolds & Temple, 2008).

In a discussion of the effectiveness of preschool programmes using results from three well-known intervention studies: the Chicago Child-Parent Centers (CPC), High/Scope Perry Preschool Programme, and the Carolina Abecedarian Project, Temple and Reynolds (2007) find strong evidence that the consistently positive economic returns of high-quality preschool programmes exceed most other educational interventions, especially those that begin during the school-age years such as reduced class sizes in the elementary grades, grade retention, and youth job training. While findings show that a variety of ECD investments are associated with positive economic returns, preschool programmes for 3-4 year olds have had the most research and generally show the highest returns across many programmes in different contexts, decades, service systems, and curricular philosophy (Reynolds et al., 2011). This is illustrated in [Figure 2](#) as the economic return per dollar invested for their review's accumulated research as a function of the age of entry into intervention.

²⁶ The average effect size on cognitive skills at or near school entry was 0.42 standard deviations (sd), which is roughly equivalent to one-half of a year of growth associated with preschool participation (Reynolds & Temple, 2008).

Figure 2: Return per dollar invested by age of entry into intervention (Reynolds & Temple, 2008)



Findings also demonstrated that large-scale school-based programmes can have long term effects into early adulthood. The longitudinal results of the Chicago CPC Preschool Programme showed that preschool participation was significantly associated with more years of education, a higher rate of high school completion, and a higher rate of college attendance. A recent study of the same programme, on indicators of well-being up to 25 years later for more than 1400 participants, found that, relative to the comparison group receiving the usual services, programme participation was independently linked to higher educational attainment, income, SES, and health insurance coverage, as well as lower rates of justice-system involvement and substance abuse enduring to the end of the third decade of life (Reynolds, 2011).

Enhancing educational efficiency through early learning investments

If it is indeed true that governments respond to short-term effects and face political difficulties in justifying long-term investment in human development, then the argument for improved educational efficiency is one that should be of interest. The strongest evidence for short-term gains to ECD investment emerges from increases in efficiency in the early years of primary schooling. The key question is the extent to which educational interventions in the

years immediately *before* primary school entry can help reduce gaps so that children from all socioeconomic backgrounds have an equal opportunity to reap the returns from schooling.

Over the years, the ECD community has consistently argued for comprehensive and integrated services²⁷ for young children, and recognition that ECD encompasses sectors other than education, notably health and social welfare. This makes sense in light of what science reveals about human development, and what experience exposes in terms of effective programmes. But, as much of the strongest evidence for short-term gains comes from increases in efficiency in the early years of primary schooling, it is the education sector which has most to gain from making the case for more ECD programming. As assessed in many longitudinal studies, including in South Africa, poor linear growth (low height-for-age) in infancy and early childhood, and lack of stimulation, is related to delayed school entry, fewer years of schooling achieved, lower school performance, and lower earnings (Walker et al., 2011; Engle et al., 2007; Richter et al., 2012).

Early academic skills are the foundation of later learning. This has led researchers and policymakers alike to suggest that children can be set on the path for economic success by boosting their early academic skills (Duncan, Ludwig, & Magnuson, 2007; Heckman & Masterov, 2007). Yet, in seeking to understand how early academic skills may lead to improved earnings in adulthood, an immediate challenge is the lack of studies that directly predict earnings as a function of early skills. A wide range of studies has assessed the impact of preschool programmes reported using developmental scores and changes in indicators of cognitive or non-cognitive ability. Such indicators may provide insight into the programme effectiveness on early childhood outcomes, but they often do not have the data to determine the impact of these changes in ability on **schooling outcomes**, which in turn can be used to calculate impacts on future earnings (Alderman & Vegas, 2011). The lack of such studies is due in large part to data limitations. Few studies that have assessed children's early academic skills have followed them long enough to collect data on their adult earnings or labour market experiences. As a result, connecting early achievement to later labour market outcomes requires a two-step process: first, surveying studies that link early achievement to achievement during adolescence; and second, surveying studies that link achievement during adolescence to subsequent labour market outcomes. Brooks-Gunn and colleagues (2009) arrive at such estimates. Their key finding is that early improvements in

²⁷ The basic features of an integrated service include provision of food, protection, health care, affectional care, stimulation, and activities to promote learning (Dawes, Biersteker, & Irvine, 2008). South Africa's National Integrated Plan for ECD (NIP) states its intention to provide, "*an integrated approach for converging basic services for improved child care, early stimulation and learning, health and nutrition, water and sanitation.*"

child health, academic achievement, and behaviour as well as improved parenting can yield sizable economic benefits for adult earnings.²⁸

Heckman and Raut (2009) investigate preschool in more detail and show that preschool benefits children in acquiring many useful cognitive and non-cognitive skills, especially for the children living in poor home environments. They show the importance of non-cognitive skills in improving school performance and life-time earnings of children, after controlling for their education level, innate ability, and family background. In addition, the magnitude, breadth, and duration of impacts for preschool have been found to be more consistent and stronger than most other remedial strategies (Reynolds & Temple, 2008), which is likely due to the greater dosage, intensity, and scope of services²⁹ (Reynolds et al., 2011).

Quality preschool programmes that provide comprehensive nutrition, stimulation and social services have benefits for children's health, growth and school performance (Engle, 2007). As a result of intensive literature and programme reviews of early child development policies and interventions undertaken by the International Child Development Steering Group (Engle et al., 2007; Engle et al., 2011), the policy recommendation is clear: implement early child development interventions in infancy through families and caregivers, and add group learning experiences from 3 to 6 years. Engle and colleagues (2011) reviewed evaluations of centre-based programmes which recorded substantial effects on children's cognitive development and gains in noncognitive skills such as sociability, self-confidence, willingness to talk to adults, and motivation. Longitudinal studies recorded improvements in the number of children entering school, age of entry, retention, and performance.

The extent to which early education represents a wise investment of public funds is determined not only by higher levels of school readiness, but also how well subsequent classroom and school experiences serve to maintain these early gains. Longitudinal data shows that benefits of Head Start fade more quickly for black children because they are more likely to attend poorer quality schools than are white ex-Head Start children (Currie, 2001), leading some to argue that the benefits of Head Start depend, in part, on the quality of the school system, a point to note in countries with weak primary schools (Alderman & Vegas, 2011). Using rich longitudinal data from the Early Childhood Longitudinal Study-Kindergarten cohort (ECLS-K), children who attended preschool were found to enter public

²⁸ For example, if a programme increased both maths and reading scores by 0.40 of a standard deviation, then the likely economic benefits would range from \$10,634 to \$21,270 (2006 US dollars)(Brooks-Gunn, Magnuson, & Waldfogel, 2009).

²⁹ Preschools typically provide >500 hours per year (Reynolds et al., 2011).

schools with higher levels of academic skills than their peers who experienced other types of child care (Magnuson, Ruhm, & Waldfogel, 2007). Their findings also suggest that most of the preschool-related gap in academic skills at school entry is quickly eliminated for children placed in small classrooms, and classrooms providing high levels of reading instruction. Conversely, the initial disparities persisted for children experiencing large classes and lower levels of reading instruction. These results point out that the longer-term effects of early childhood experience partly depend on classroom experiences during at least the first years of school. In other words, **preschool attendees achieved at relatively high levels, regardless of the type of classrooms experienced**, whereas the classroom context mattered more among children who did not attend preschool³⁰ (Magnuson et al., 2007). One of the key findings of studies that examine socioeconomic gradients³¹ for youth literacy scores in countries is that gradients tend to converge at higher levels of socioeconomic status. Youth from advantaged backgrounds tend to do well in any environment, while those from less advantaged backgrounds vary considerably in their proficiency among environments (Willms, 2003).

Empirical evidence from developing countries

So while there is substantial empirical evidence that intensive early education interventions targeted specifically at disadvantaged children lead to significant benefits, both in the short and in the long run (Magnuson, Ruhm, & Waldfogel, 2004) (Barnett & Ackerman, 2006) (Karoly, Kilburn, & Cannon, 2005) (Belfield, 2004), much less is known about the benefits of expanding pre-primary education for the population as a whole in middle- and low-income settings (Berlinski, Galiani, & Manacorda, 2008), and little empirical evidence from developing countries has been published (Aguilar & Tansini, 2011). Alderman and Vegas (2011) highlight that this, in part, reflects the difficulty in identifying the impact of programmes from the impact of self-selection: comparisons of subsequent school achievement for those who attended preschool with those who did not, often merely show that if a family values education and are more motivated and engaged, subsequent school performance generally improves. Fairly recently, however, compelling evidence has emerged from South America.

³⁰ One reason why the authors find that the effects of preschool persist, whereas other studies have not, may be because the large sample size increases the statistical power to detect such associations (Magnuson et al., 2007).

³¹ Socioeconomic gradients are a useful policy tool for informing social policy, as they call attention not only to the level of learning, behaviour, and health outcomes, but also to inequalities associated with socio-economic status (Willms, 2003).

Galiani and Berlinski (2005) evaluate the large-scale expansion of pre-primary school facilities in **Argentina** in the early 1990s.³² The Argentinian government targeted construction in poor areas with low pre-primary enrolment rates.³³ They found that the large impact of the programme on preschool participation suggested that the bottlenecks when it comes to investing in children were supply constraints. With respect to the same programme, Berlinski, Galiani and Gertler (2009) demonstrated that one year of pre-primary education increases the average third grade test marks in standardised Maths and Spanish tests by 8% of the mean.³⁴ Moreover, self-discipline, self-control, class participation, and concentration skills in third grade are also positively enhanced. The authors argue that the contribution of preschool education is to facilitate socialisation, which in turn allows the child to take advantage of opportunities for learning as they grow older.

Berlinski and colleagues (2008) evaluated the effect of pre-primary education on subsequent school performance in **Uruguay** by comparing siblings who had attended preschool to those who had not. The educational reform programme launched in 1995 in Uruguay, introduced the universalisation of preschool for four-and-five year old children aimed at enhancing children's readiness to start school. This large scale expansion of public preschool institutions focused on historic areas of low coverage enabled researchers to identify the impact of such programmes on school achievement. They showed that by age 16, children who had attended preschool had obtained, on average, one more year of education than their siblings who had not attended preschool. Moreover, those who had not attended preschool were almost 30% more likely to have dropped out of school by age 16. Using a within household estimator, small gains from preschool attendance at early ages get magnified as children grow up. The authors concluded that a publically provided preschool education appears a very efficient and cost effective policy option in countries where the system is unable to retain a large number of children and teenagers, as is the case in many developing countries.

Aguilar and Tansini (2011) used bivariate probit and treatment effects estimations to examine the same Uruguayan policy, and found attendance at preschool to be paramount among the factors explaining school performance in the first school year. When the

³² Argentina embarked on a large infrastructure programme to increase school attendance for children aged 3-5 in 1993, and by 1999, had built enough classrooms to accommodate an additional 186 000 children. Most of the rooms constructed were in preschool annexes of public primary education institutions. Each room accommodated 25 children, and most public preschools operate in 2 shifts (Galiani & Berlinski, 2005) (Berlinski et al., 2009).

³³ The government used a non-linear allocation rule based on an index of unsatisfied basic needs using Census data.

³⁴ Or by 23% of the standard deviation of the distribution of test scores.

performance³⁵ of children in first year in 1999 was examined, academic results were explained by a number of factors related both to the school and to the characteristics of the household. When the results of the same children were studied after six years at school, a similar picture was unearthed, with attendance at preschool once again being one of the main factors explaining school performance. Their main conclusion was that preschool, and children's performance in the first year at school, are crucial for the long term academic results (Aguilar & Tansini, 2011).

Mexico provides another interesting case in which planned expansion of early childhood care and education has occurred since 2000 through three initiatives: a mandate; a quality improvement initiative; and a national curricular reform (Yoshikawa et al., 2007). The law mandating preschool attendance passed in 2001 required that all parents in Mexico send their 3-5 year olds to preschool programmes and set a timetable for 100% coverage of each of these groups.³⁶ This law mandated a huge and unprecedented expansion in Mexico's preschool education system within an extremely short time frame. Following its passage, enrolment of Mexican 4 and 5 year olds in preschool education programmes has increased greatly, with the result of near-universal attendance among 5- year-olds as of the 2005-2006 school year and 81% attendance among 4 year olds (Yoshikawa et al., 2007).

Other international early learning programmes also report higher school enrolment, less grade repetition, and fewer dropouts. **Colombia's** PROMESA programme reports significantly higher enrolment rates in primary school for children participating in the programme, compared with children not participating in the programme. The grade 3 enrolment rates for children who participated in the PROMESA programme increased by 100%, reflecting their lower dropout and repetition rates. In addition, 60% of the children who participated in the ECD programme attained grade 4, compared with only 30% of the comparison group (Garcia, Pence, & Evans, 2008). In Colombia's PROMESA programme, and the Alagoas and Fortaleza PROAPE study of Northeast **Brazil**, children who participated in the programmes repeated fewer grades and progressed better through school than did nonparticipants in similar circumstances.

³⁵ The authors found the main problem when modelling school results was finding an appropriate measure of school performance. They used measures that included the probability of passing the first school year and the probability of passing the sixth year on schedule, as well as indicators built upon the marks obtained by the children.

³⁶ Target dates of 2004, 2005 and 2008 for 100% coverage of 5-year-olds, 4-year-olds and 3-year-olds, respectively. The mandate for 3-year olds is the only such mandate in the world (Yoshikawa et al., 2007).

Nores and Barnett (2010) added to the non-US evidence base by undertaking a meta-analysis summarising research on short- and long-term effects of a wide range of early childhood interventions. They grouped results from these international studies into four outcome domains: cognition, behaviour, health, and amount of schooling. A total of 56 studies reporting the effects of 30 interventions in 23 countries in Europe, Asia, Africa, Central and South America were analysed. They confirmed that strong evidence can be found on the cognitive and behavioural benefits from these interventions, as well as the potential for large economic gains from improvements in child development outcomes. All of the major types of early childhood interventions had substantial average effect sizes across a diverse sample of programmes and countries.

During the last decade, ECD has been expanding in low-, middle- and upper-income countries. Worldwide, pre-primary school attendance has nearly tripled in the last thirty years, though enrolment varies dramatically by region. For example, in 2004, pre-primary enrolment rates for children between 3-5 years old were approximately 73% in developed and transition countries, compared with 32% in developing countries (UNESCO 2006). (Yoshikawa et al., 2007) Engle et al. (2007) consider preschool enrolment to be averaging 35% in developing countries in 2001. In the past 15 years, at least 13 developing countries have instituted compulsory preschool or pre-primary programmes. The regions with the highest need when assessed by grade 1 repetition and dropout, for example sub-Saharan Africa, have shown the slowest progress. Programme coverage is negatively associated with countries' general poverty index, leaving the poorest countries with almost no investment in early child development. However, some countries, such as India, have invested in programmes, despite poverty (Engle, et al., 2007).

In many school systems, a large proportion of children do not reach basic literacy until well into their primary school years, if ever. Needless to say, the absence of a tangible learning outcome implies an inefficient education investment (Alderman & Vegas, 2011). This inefficiency is extremely costly. Grade repetition takes up classroom space, teacher time, textbooks and materials. Across sub-Saharan Africa, where the problem of inefficiency is most acute, UNESCO estimates that **33% of public expenditure on education is spent on grade repetition**, adding up to a cost of \$6.2 billion (Gertsch, 2009).

Estimations in Africa assert that an increase in the preschool gross enrolment rate to 40% during the next decade could reduce repetition rates and increase the proportion of grade 1 pupils who reach grade 5 from 65% to 78% (Engle, et al., 2007). In another estimate, an increase in the coverage of preschool in Africa to 30% by 2015 may result in an efficiency

gain of 15% in resource use in primary education (Hyde, 2008). Further evidence comes from the work of researchers Jaramillo and Mingat. They argue that there is a structural relationship between preschool and primary education, and analyse data on repetition and completion rates in schools in sub-Saharan Africa in comparison with other regions. They describe a positive association between preschool enrolment and school survival, and a negative association between preschool enrolment and class repetition³⁷ (Garcia et al., 2008). Mingat estimates that, on average, one additional percentage point in the Gross Enrolment Rate (GER) for preschool implies a reduction of 0.12% in the repetition rate. And a reduction of 1% in the repetition rate for primary school leads to an increase of 0.875% in the survival rate to grade 5. This effect results from two sources. Firstly there is an indirect effect through the combined impact of preschool on repetition and of repetition on survival. Secondly there is a direct effect (that may represent the impact of preschool on the demand for schooling).³⁸ They estimate that investments in ECD in sub-Saharan Africa would be offset by 87% as a result of higher efficiency in primary education alone (Garcia et al., 2008). The authors acknowledge that their data are unreliable and extremely variable, but nevertheless consider them sufficient to produce economic models on which to base a case for the expansion of ECD (Penn, 2004).

Recently the initial results of the first randomized evaluation of a preschool intervention in a rural African setting have been presented (Martinez, Naudeau, & Pereira, 2012). Starting in 2008, a centre-based community driven preschool model was implemented in rural areas of the Gaza Province of Mozambique.³⁹ Compared to a baseline, children who attended preschool were 24% more likely to be enrolled in primary school, demonstrated improvements and outperformed their peers in cognitive, problem-solving abilities, fine-motor skills, socio-emotional and behavioural outcomes, but had mixed results in health. Some of the principal measures of communication and language development were not significantly different between the treatment and control groups, and were alarmingly low for both groups (Martinez et al., 2012).

Caveats: Targeting and Scale

The fact that special interventions like Perry Preschool or the Carolina Abecedarian Project had an effect on at least some target children does not prove that most programmes will do

³⁷ The higher the preschool enrolment, the higher the proportion of the cohort that survives to grade 5.

³⁸ Implying that an increase of 1 % in preschool GER would yield an increase of 0.209% in the survival rate to grade 5.

³⁹ The project financed the construction, equipment and training for 67 classrooms in 30 communities, at a cost of approximately \$2.47 dollars per student per month.

so. While small-scale ECD programmes can work, can they be reproduced exactly on a much larger scale? The evidence raises concerns that gains on the educational, social, and economic success of children growing up in disadvantaged circumstances will not be realised when public policies are brought to scale (Barnett & Ackerman, 2006). The far larger Head Start programme is not of the same quality as the model interventions, and quality varies from centre to centre. While the programme draws mixed reviews, Head Start centres have nonetheless been of higher average quality than other preschool programmes available to low income people (Almond & Currie, 2010). Children who participated in Head Start did better later in school than their siblings who did not benefit from the preschool intervention, and two recent studies found positive effects of the preschool intervention on outcomes measured during the adolescence years (Almond & Currie, 2010) (Alderman & Vegas, 2011). Detailed study of long term outcomes from the programme concluded that the benefits of a large-scale programme like Head Start could offset just 40-60% of the costs, a modest (but still positive) conclusion (Currie 2001). Such relatively low returns may appear disappointing within an economic framework, but human capital is not the only - nor necessarily the most appropriate - basis for defining ECD policy, especially in global contexts (Woodhead, 2006). Evidence suggests positive impacts are not just about increased human capital, they are also about social capital.⁴⁰

A limited number of quasi- and non-experimental studies have identified modest effects of larger-scale programmes on children's development including greater receptive language and maths ability, cognitive, attention and social skills, as well as fewer behaviour problems (Yoshikawa et al., 2007). Almond and Currie (2010) report on an evaluation of the effects of Oklahoma's universal pre-Kindergarten: positive gains in pre-reading, pre-math and pre-writing scores suggest that a high quality universal pre-K programme might well have positive effects.⁴¹ Only fairly recently has the evidence from low- and middle-income countries been carefully analysed (Engle et al., 2007) (Engle et al., 2011), and interventions proposed which are, 'in principle,' feasibly taken to scale in low-resource contexts. Nonetheless, the key assumption of first world policy makers - that **targeted** early childhood interventions are an appropriate and effective way to address poverty - inevitably spill over into the third world (Penn, 2004). However, targeting can be highly inaccurate in practice, particularly when a status (poverty and/or maternal employment) changes fairly frequently and in a service that must be provided consistently over a sustained time (Barnett &

⁴⁰ For example, self-selection into classroom settings and peer groups where there are positive attitudes and expectations, and an altered relationship to their social environment.

⁴¹ Though one would have to track children longer to determine whether these initial gains translate into longer term gains in schooling attainment

Ackerman, 2006). The costs associated with administering and monitoring targeted programmes can also be high. Moreover, substantial benefits of children's learning and development extend far up the income ladder, with enrolment of children from a variety of socioeconomic backgrounds producing previously unrealised peer effects. Large-scale preschool education for four-year olds, particularly universal programmes within a community, may produce larger gains because of these peer effects.⁴² Results from a study examining the effects of Georgia's universal preschool programme support this hypothesis (Barnett & Ackerman, 2006). Targeting versus universal implementation may, therefore, be an economically inefficient strategy.

Discussion and Conclusion

Evidence and common sense suggest that the benefits and risks of early childhood are not identical between developing and high-income countries, and if programmes in developed countries were transplanted directly into developing countries, it is highly unlikely that the same benefits would be seen.⁴³ Likewise, the benefits that are seen in developing countries may not be those one would find in developed countries (Gertsch, 2009).

Very few studies have examined the impact of ECD services on child outcomes in South Africa. There are no peer-reviewed studies. The studies that have been done report mainly on health benefits for children, particularly with regard to nutrition and growth outcomes. All these studies have been hindered by a lack of non-experimental data, however. Dawes et al. (2008) report only two small-scale unpublished outcome studies that are available for South African formal ECD evaluations. Both found gains in child outcomes relevant to schooling following participation in high-quality, centre-based programmes compared with control groups (Vinjevoold, 1996; Herbst, 1996).⁴⁴ Short & Biersteker (1984) followed the scholastic performance of ECD centre participants into adolescence and they performed above the school population average. A fairly recent South African report refers to a South African study of 150 rural African children suggesting that cognitive ability at the end of Grade 1 predicted later progress through school, and was a good predictor of retention in school (Burns, 2007). In other domestic studies, Fiske and Ladd (2004) allude to the expense of remedial interventions when they argue that more spending is needed in schools serving a

⁴² If everyone in a kindergarten or classroom has attended preschool, classroom climate will change, median ability will rise, and dispersion in ability will narrow, with those at the bottom gaining most.

⁴³ While the Perry Preschool Programme had many positive effects, one of the most significant was the lower incarceration rates among young African American men, which is unlikely to be repeated in other contexts. Similarly, the biggest rate of return on investment in the Chicago Child-Parent Centers was the increase in mothers' employment.

⁴⁴ Vinjevoold (1996) reported that Black children from farm schools and townships involved in the Ntataise preschool programme demonstrated better fine motor skills, better concentration skills and more confidence.

disproportionate number of disadvantaged students to cover the differentially high cost of educating children who come to school less ready to learn.

Evidence on beneficial schooling outcomes in literacy and numeracy from preschool in South Africa has recently been extracted in an analysis of SACMEQ III.⁴⁵ The regression results show that preschool education has a marked impact on Grade 6 academic achievement. Strong correlation between preschool education and wealth was found, with poorer quintiles having less preschool education and higher quintiles having more preschool education. The report also found a large negative impact from grade repetition, more prevalent amongst the poorer quintiles, which increased as the number of grade-repetitions increased. Of interest, there was not a large difference between one year and three years of preschool education (Spaull, 2011).

The Sobambisana programme⁴⁶ created an opportunity for assessing whether, and to what extent, the South African ECD experience conforms to international evidence. Its evaluation used a quasi-experimental process, with suitable controls comprising groups of beneficiaries and wait listed comparison groups. The impact of programmes aimed at improving children's readiness for Grade R, assessed by means of cognitive, language, numeracy and academic readiness tests, was mixed. The best results were found in group programmes at ECD centres, with curriculae aligned to these outcomes. It was also found that regardless of the efforts put into community and site-based ECD programmes, some factors largely beyond the programmes' control, play a significant role in tempering the results (Dawes et al., 2011).⁴⁷ For this reason, there is a strong argument for recognising that educational solutions to poor general schooling outcomes can only address part of the problem. Many South African children arrive in formal school with their developmental potential considerably compromised and as a result, they are unlikely to be able to benefit much from what are often under-resourced educational settings (Umalusi et al., 2010).

An important question that arises is why, if the model in Cunha et al (2005) is correct, do parents not invest more in developing critical skills of their children at early ages? What is the market failure? One possibility is that parents are credit constrained. As Heckman and Carneiro (2003) and Cunha and colleagues (2005) discuss, there are two possible forms of credit constraints that could affect investments in early childhood. Firstly, the timing of family income may matter. Even those parents whose expected lifetime income is high enough to

⁴⁵ SACMEQ III was the first of the SACMEQ surveys to ask students about their preschool education.

⁴⁶ Sobambisana, a component of the Ilifa Labantwana ECD programme, was the first attempt in South Africa to develop a local evidence base for interventions aimed at improving ECD.

⁴⁷ High levels of stunting and under nutrition were recorded at all programme sites. Levels of cognitive development were below the norm for age. Both factors significantly reduce the efficacy of ECD.

allow them to make adequate investments, may have insufficient resources at their disposal when their children are young, and hence they may under-invest in their children. Secondly, the lifetime income of some parents may be too low for them to borrow sufficiently against it; this too could result in inadequate investments in early childhood learning. Both papers then argue that the first kind of credit constraint is empirically unimportant in the United States. But, it is not clear whether this empirical evidence can be applied to developing countries (Schady, 2006).

There is another reason for under-investment by parents in early childhood skill formation which is not discussed at great length in these papers: the problem of information failures. These failures may be a particularly important consideration in developing countries, where education levels are much lower than those found in the United States. It is generally believed that low parental education levels play a causal role in explaining poor child health status in developing countries; much the same is likely to apply to other dimensions of skill formation in early childhood. To the extent that this is the case, inadequate knowledge by parents about the returns to investments in childhood, about the benefits of specific policies or programmes, and about good parenting practices may cause them to underinvest (Schady, 2006). This may be supported by evidence revealed in the South African 2005 General Household Survey (GHS). When parents are asked in the GHS for the reasons behind not enrolling a child in preschool, over 80% of respondents explained that the child is 'too young'. All other possible responses, including preschool location and fees, received fewer than 1% of responses (Burns, 2007). The demand is simply not there from parents with no experience of preschool and its benefits. For most South Africans, preschool will be a first generation experience. Furthermore, as revealed by the preschool expansion programmes in Argentina, preschool supply constraints are a real and impeding bottleneck to increased investment in early learning.

In sum, this chapter has shown the power of early learning investments. Evidence points to the importance of preschool education for future learning success, the potential it holds to address some of society's intractable inequalities, and the capacity it has to have meaningful impact at scale in developing countries. Importantly, the accumulated evidence unequivocally stresses the importance of high quality centre based education programming to effect any long term change in children's cognitive, social and economic outcomes. There are slight, if any, advantages to be gained from poor quality services (Richter et al., 2012).

Given the strength of the evidence for investments in early learning opportunities, the enquiry into the potential for expanded provision needs now to consider the specifics of the target population in greater detail as described in Chapter Two.

Chapter Two

The context in which early learning occurs: perspectives on South African child circumstances

The South African government has demonstrated its commitment to ECD by signing the **African Charter on the Rights and Welfare of the Child**, the United Nations' **Convention on the Rights of the Child (CRC)**, **Education for All (EFA)** and the **Millennium Development Goals (MDGs)**. Moreover, children's rights are protected by **legislation** such as the **South African Constitution** and **The Children's Act of 2007**, **policies** such as **National Integrated Plan for ECD 2005-2010 (NIP)**, and various **White Papers**.⁴⁸

The Constitution of the Republic of South Africa accords express protection in Section 28 to children's social and economic rights, ranging from the right to a name and nationality, to protection, nutrition, health care and social services. Section 29 of the Constitution states that everyone has the right to a basic education. This range of socio-economic child rights, unlike their 'adult' counterparts in the Constitution, are given the highest priority. Children have the right to full realisation of the substantive right in question, which is not limited by the condition of 'access to', nor 'progressive realisation'. The passing of The Children's Act in 2007 brought South Africa's legislative framework for child care and protection in line with the SA Constitution and International Law. It adopted a developmental approach that emphasised the State's role in the provision of social services (The Presidency South Africa, 2009). The National Integrated Plan for 0-4 year olds is an interdepartmental initiative to coordinate service delivery to young children at home, in the community and at centres, and includes access to social security, primary health care and nutrition, birth registration, psychosocial support and early stimulation.

In legislation and policy, the commitment is clear and overarching, and reflects the vision of a comprehensive approach to ECD (Richter et al., 2012). Nonetheless the reality faced by the overwhelming majority of the country's children is glaringly disconnected from the supportive environment prescribed by this legislation. This chapter describes the particular characteristics of children of this age that make government support and delivery more (or less) difficult, and considers what the implications of their daily realities are for rolling out

⁴⁸ 1995 White Paper on Education and Training, 1997 White Paper on Social Welfare, 2001 White Paper 5 on Early Childhood Development

increased support. It will answer this by considering eight stylised facts regarding the uniquely South African context of early learning opportunities in the country. As far as possible, data on 3-5 year old children only has been assembled.

Fact One: Stunting and other common health setbacks significantly compromise children's potential

South Africa is home to 2.2 million stunted children⁴⁹ (18% prevalence), which affects their short and long term strength, stamina and cognitive ability (Richter et al., 2012). This figure is higher for the 1-3 year olds, with a national average of 23%.⁵⁰ The highest prevalence is in the Free State and Eastern Cape (The DG Murray Trust, n.d.). Stunting results from long-term under nutrition due to inadequate frequency of feeding and poor quality food. The trajectory of linear growth is laid down in the first two years of life, and young children who have received insufficient food **do not make up for poor growth at a later age** (Richter et al., 2012). Stunted children achieve, on average, one school grade less than their better grown peers. Stunting combined with poverty (below the third quintile for income) is associated with the loss of 2.15 grades of schooling (Walker et al., 2011). Stunted children who received no intervention earn roughly 46% less as adults than stunted children who received supplementary feeding in their first two to three years (Richter et al., 2012).

Thus the poor nutritional status of children in South Africa is of singular concern. In addition, 16% of children are born of low birth weight (<2500gms), which in turn is the single best predictor of child health and wellbeing and is caused by poor maternal nutrition, stress and/or ill-health. In 2010, food insecurity, as reported by the 2010 General Household Survey, was recorded by 15% of households testifying that a young child of 3-4 years had *sometimes* gone hungry because of lack of food, and 3% and 1% relating that this happened *often* and *always* respectively (Richter et al., 2012).⁵¹

In addition, common but **simply** and **cheaply** treatable conditions still permanently affect a staggeringly large number of school-aged children in the country: worms at 30% national

⁴⁹ Below 2 standard deviations of expected height-for-age

⁵⁰ UNICEF reports a higher South African national figure at 23%, and neighbouring countries' stunting rates as: Mozambique 36%; Namibia 28%; Zimbabwe 32%; Lesotho 44%; Botswana 29%. The sheer numbers of children affected in South Africa eclipses those of its neighbours.

⁵¹ Yamauchi (2005) uses data from the KwaZulu-Natal Income Dynamics Study (KIDS) to explore the effect of early childhood nutrition on schooling inputs and outcomes. The analysis suggests that an improvement in child health significantly lowers the age for starting school, increases the grade reached, and decreases grade repetition at the early stage of schooling (Leibbrandt et al., 2010).

prevalence,⁵² and anaemia at 28% prevalence.⁵³ While the prevalence of HIV in children aged 2-14 years is relatively low at 2.5%, the HIV prevalence in pregnant women (15 – 49 years) is 29%. And South Africa has the highest recorded rates⁵⁴ of foetal alcohol syndrome (FAS) in the world, which is a significant contributor towards disability among young children (Richter et al., 2012).

Fact Two: Families may not always provide stimulating, supportive home environments for children

The home environment of most of the country's children is a far cry from the supportive nuclear families assumed by much of the legislation and policy. Parents are, more often than not, single, unemployed, young, vulnerable, and possibly depressed.

The disturbing fact is that, amongst children aged 3-4 years, **only 36% are resident with both biological parents** and **19% live in households where neither parent is resident** (Richter et al., 2012). Amongst children aged 3-4 years, 79% have a co-resident mother, and 38% have a co-resident father.⁵⁵ If this is disaggregated by quintile, a pattern of parental cohabitation roughly proportional to household wealth would emerge. For example, 2010 GHS data report that 30% of 3-4 year old children are resident with both parents in households with expenditure of less than R1200 a month, whereas this would stand at 81% in households with monthly expenditure of R10 000 or more. Over 65% of caregivers of children receiving the child support grant (CSG) are single parents (Department of Social Development South Africa, 2006). There are estimated to be a total of 1.5 million maternal orphans⁵⁶ under the age of 18 years, of whom about two thirds are due to AIDS (Dorrington, Johnson, Bradshaw, & Daniel, 2006). Orphans are less likely to be enrolled in school, and if they are in school, they lag behind children of the same age (Burns, 2007).

⁵² Worms affect some areas more than others. For example, more than 90% of the children attending 12 primary schools serving two large informal settlements in Cape Town were found to be infected with worms (Richter et al., 2012).

⁵³ It is estimated that the permanent effect of these diseases on the cognition of school-aged children is the following: the number of additional cases of IQ<70 (70 is the IQ cut-off for severe mental retardation) Stunting 163 000; Anaemia 520 000; Worms 346 000 (Richter et al., 2012). While data is on school aged children, these conditions affect younger children similarly.

⁵⁴ While the rate is lower than 1 child per 1 000 in the United States, some 88 out of every 1 000 children in the Western Cape are born with FAS (Richter et al., 2007).

⁵⁵ A South African study found that boys who live with their fathers have higher academic achievement, self-esteem, emotional wellbeing, and less aggression than boys who live in father-absent households (Garcia et al., 2008). If fathers were non-resident, 41% of children aged 3-4 still received financial support from their biological fathers (NIDS 2008).

⁵⁶ The term 'maternal orphans' refers to children who have lost a mother or both parents.

Key to understanding the home environment is recognising significant parental characteristics. By the age of 19 years, 35.1% of women had been pregnant⁵⁷ (Richter et al., 2012). While these mothers may well produce healthy children, young and adolescent parents do not always possess the capacity to accommodate a young child's needs, given their own on-going psychological maturation. Parental social or psychological disorders, including substance abuse⁵⁸ and domestic violence, is associated with erratic parenting, which may be both dangerous as well as psychologically damaging to young children. Richter et al (2012) report on a study in Soweto of antenatal clinic attendees which found that **more than half** of all women aged 15 to 30 years had experienced physical and/or sexual violence from male partners. High levels of depression of greater than 30% have been reported amongst South African mothers (Richter et al., 2012), while in some poor communities, maternal depression is as high as 35% (Walker et al., 2011). Depression debilitates parenting through self-preoccupation, emotional withdrawal and inconsistency, damaging the potential of a secure mother-child bond.

Over 85% of the caregivers receiving the CSG are unemployed (Department of Social Development South Africa, 2006). Only 20% of children aged 3-4 years have a co-resident mother who was being paid a wage or salary on a regular basis by an employer, whether for full-time or part-time work.⁵⁹ Likewise, only 31% of children aged 3-4 years have a co-resident father who in 2008 was similarly employed.

Fact Three: Most children in the country are exceptionally poor and grant dependent

Persistent, cumulative poverty and exposure to hardship in the first year of life have a detrimental effect on cognitive functioning (Walker et al., 2011). The effect of poverty appears to be stronger on verbal, as opposed to non-verbal, skills (Richter et al., 2012). Poverty has pervasive effects on children's health development through a host of factors, some of which have been discussed: inadequate food, poor sanitation and hygiene,⁶⁰ low birth weight, stunting, micronutrient deficiencies, low levels of intellectual and socio-

⁵⁷ Data from the 1998 South Africa Demographic and Health Survey.

⁵⁸ Approximately 14% of South Africans have a substance use disorder (Richter et al., 2012).

⁵⁹ NIDS 2008, but consistent with the subsequent trends seen in the 2009 and 2010 GHS surveys. It appears that most of these working mothers are working fulltime, given their reported 42 work hours a week. The data suggests that women with older children (3-17 years of age) are more likely to be engaged in some form of economic activity as compared to women with children 0-2 years of age (Richter et al., 2012).

⁶⁰ Despite the physical living conditions of millions of children improving dramatically over the last 18 years, amongst households with young children, 13% still access unsafe water, 30% still report the absence of hygienic sanitation, and 18% still have no mains electricity connection.

emotional stimulation, parental depression, harsh punishment and interpersonal violence (Richter et al., 2007). All these factors detrimentally affect children's development.

The distribution of young children across household expenditure categories is startling.

Almost three quarters (72%) of South African children aged 0-6 years are living in households earning less than R2499 a month (2010 GHS).⁶¹ Another way of examining this information for 3-4 year olds only, is by examining their distribution per income quintile in NIDS 2008: 75% of children of this age are found in households in the lower three quintiles, and only 11% in the highest quintile.

Leibbrandt et al (2010) confirm the national trend of positive but modest improvements in overall poverty, but high and persistent child poverty,⁶² a worsening of inequality, and a significant poverty difference between rural and urban areas since the fall of Apartheid. Poverty rates increased unambiguously in urban areas between 1992 and 2001. While a much higher proportion of the rural population are poor, the proportion of the poor who are in rural areas is declining.⁶³ Despite the positive impact of government support for the older generations through the state old age pension, and the roll out and near universal uptake of the CSG programme since 1998,⁶⁴ the **incidence of child poverty has remained high** and declined only marginally over time (Leibbrandt, Woolard, Finn, & Argent, 2010).

Two-thirds of income to the bottom quintile comes from generous state social assistance,⁶⁵ mainly CSGs,⁶⁶ which have a positive effect on school attendance rates, health status and nutritional outcomes (Leibbrandt et al., 2010). For example, Agüero, Carter and Woolard (2006) examined the effect of the CSG on nutrition outcomes, and found that receipt of the CSG during the first 3 years of a child's life had a significant impact on height-for-age z-scores (HAZ), and was associated with a lower probability of stunting (Richter et al., 2012). Woolard (2003) estimated that the CSG reduced national poverty from 33.1% to 28.9%.⁶⁷ The impact on child poverty was much larger, with the percentage of children in poverty falling from 42.7 % to 34.3% and those children in ultra-poverty from 13.1% to 4.2% (Pauw &

⁶¹ 45% of children aged 0-6 are living in households with a monthly household expenditure of less than R1 200 per month, which is roughly equivalent to a two-person household living below the 'ultra' poverty line of R552 per person per month in 2009 (Richter et al., 2012).

⁶² The poverty incidence is the highest for the three child cohorts: children from zero to twenty years.

⁶³ By 2001, 44% of the poor were in urban areas, in comparison with 38% in 1996 (using a higher poverty line).

⁶⁴ Uptake of the CSG in the 4-6 year age brackets is between 90-95% (The Presidency South Africa, 2009).

⁶⁵ At 4.4% of GDP, spending on social assistance is three times higher in South Africa than the median spending of 1.4 % of GDP across developing and transition economies (Leibbrandt et al., 2010).

⁶⁶ At the time of writing, the value of the Child Support Grant is R280 per month and the means test threshold is R2800 per month. Receipt of a child support grant entitles the child beneficiary to automatic fee waivers for schooling up to grade 12, and to free health care at all levels (The Presidency South Africa, 2009).

⁶⁷ Assuming that all the children eligible for the grant, access it, and that this money is pooled with all other financial resources, including full uptake of the old age pension.

Mncube, 2007). In total, a third of households in South Africa report income emanating from the Child Grants,⁶⁸ and **grants are the main source of income in 34-40% of households with children** (Richter et al., 2012). In households with at least one child aged 3-4 years, 39% of household income in 2010 comes from grants, while 43% of income comes from salaries, wages or commission.

Fact Four: Deprivation amongst children is spatially concentrated

The recent creation of a South African Index of Multiple Deprivation for Children (SAIMDC) first at municipal level (Barnes, Noble, Wright, & Dawes, 2009), and then at the smaller datazone level (Wright, Barnes, Noble, & Dawes, 2009), presents a disaggregated picture of affluence and deprivation across the country.⁶⁹ The municipal level SAIMDC is shown in Figure 3 below: the provinces are designated by thick black lines and the municipalities by thinner black lines.⁷⁰ Datazones, 22 077 of which were created, are small areas containing approximately the same number of people (average 2 000),⁷¹ and providing a fine-grained profile of poverty which enables pockets of deprivation to be identified in otherwise affluent areas.⁷²

The most deprived 10% of datazones in South Africa are shared unevenly between the nine provinces with the overwhelming majority in the Eastern Cape (57.2%) followed by KwaZulu-Natal (31.9%). An analysis of provincial data superimposed on datazone information, shows clearly the concentration of poverty of child numbers in the provinces of the Eastern Cape and Kwazulu Natal. A quarter of the country's children, a large 1 220 882 children, between 0-4 years of age live in Kwazulu Natal. Similarly, 14% of the country's children, or 714 355 children, between 0-4 live in the Eastern Cape. In total, almost 70% of the country's children live in four provinces: KwaZulu-Natal, Gauteng (18%), Eastern Cape and Limpopo (13%) (The Presidency South Africa, 2009). From a policy point of view, the reality of a large group of marginalised rural poor has greatly increased the difficulty and the costs of social delivery.

⁶⁸ NIDS 2008. Quintile breakdown for income from Child Grants: quintile 1 – 55.8%; quintile 2 – 57.9%; quintile 3 – 45.4%; quintile 4 – 26.5%; quintile 5 – 9.0%. Child Grants include the CSG, Foster Child Grant and Care Dependency Grant.

⁶⁹ Making use of information from the 2001 Census, 14 child-focused indicators were arranged into five domains of deprivation experienced by children: income, employment, education, living environment and adequate care. These were then combined with equal weights to form an overall index of multiple deprivation. While change will have occurred since the 2001 Census, for most areas the relative position is likely not to have altered greatly.

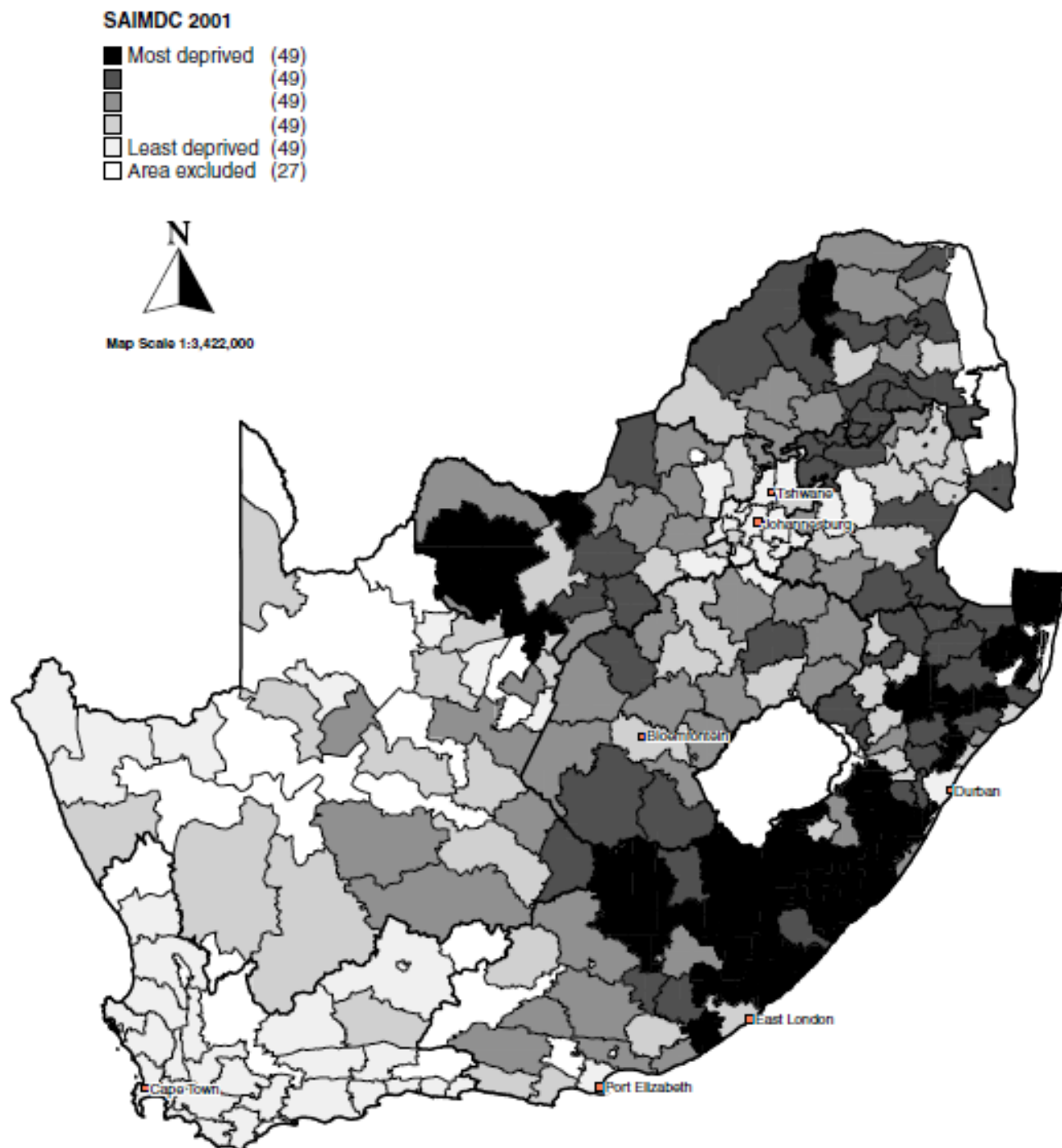
⁷⁰ The SAIMDC at datazone level is too detailed to include for illustration purposes here.

⁷¹ On average, each datazone contains 773 children aged 0-17, and no datazone contains less than a hundred children.

⁷² For example, within the City of Cape Town, pockets of deprivation are apparent in Langa, Nyanga, Crossroads, Imizamo Yethu, Masiphumelele and Khayelitsha.

Evidence indicates that educating children from poor families requires more resources than educating children from better-off families (Biersteker, 2008a).

**Figure 3 South African Index of
Multiple Deprivation at
Municipal Level**



Fact Five: Very few children are exposed to any sort of early learning opportunities

In 2002, 7% of children in the 0-4 age cohort were accessing ECD services through pre-primary centres and crèches; by 2008, this number had increased to 1.4 million (28%) children in the same cohort⁷³ (van der Berg et al., 2010), and in 2009, this number was 30%⁷⁴ (Richter et al., 2012). This significant increase is linked to a marked increase in learner subsidies over that time: 467 000 children currently access means-tested subsidies. Attendance has remained stable in the highest SES group at roughly 50% of children, and doubled among the poorest group, from about 14% in 2005, to 29% in 2010⁷⁵ (Richter et al., 2012).

The Diagnostic Review concluded that, **at most, a quarter of 3-4 year old children** attend facilities that expose them to experiences that may stimulate their cognitive and educational development. Another quarter may be in out-of-home facilities providing the essential services of safety and nutrition whilst parents are at work. The other half is not exposed to any regular out-of-home ECD experience (Richter et al., 2012). Attendance is highest in Gauteng (43 %) and the Western Cape (39 %) and lowest in KwaZulu-Natal (25 %) and the Northern Cape (21 %). Attendance in formal preschool is low among 0-4 year olds (about 6%), with most children who attend an ECD facility accommodated in crèches (about 22%). Coverage of non-centre-based programmes is very low, and is estimated at no more than 3%, and only a small number of children (11,470) have been registered as part of a home-based ECD programme (Richter et al., 2012).

In terms of the amended Children's Act (as effective from April 2011), all ECD facilities⁷⁶ and programmes need to be registered in order to operate. To date, 18 826 of the original 23 482

⁷³ 2008 NIDS data

⁷⁴ Using a different data set – the General Household Survey (GHS)

⁷⁵ Preschool enrolment increases as annual household income increases. However, controlling for income level, differences emerge in the fraction of children enrolled in preschool. For example, amongst households earning an annual income of between R1 and R4800, 16% of Black and Indian children are enrolled in preschool, compared to 12% of Coloured children and a third of all White age-eligible children (GHS, Labour Force Survey (LFS) and Census). This suggests that it is not only household income that affects enrolment, since this is controlled for in the analysis. Rather, it suggests that there are other factors that are correlated with population group characteristics, that may be important in understanding participation in ECD activities, such as location, employment prospects, reliance on family/informal care arrangements, and the information failures discussed in Chapter Two (Burns, 2007).

⁷⁶ Defined as any building or premises maintained or used [...] for the admission, protection and temporary or partial care of more than six children away from their parents. [It] can refer to a crèche, a day-care centre for young children, a playgroup, a preschool, after-school care, etc (The Presidency South Africa, 2009).

sites counted by the 2001 Audit,⁷⁷ have been registered. This is 70% of the targeted 26 062⁷⁸ centres. If this provision were implemented, it is likely that about a third of all ECD facilities would have to shut down.⁷⁹ Even if sites are registered, it does not necessarily mean that they will receive the subsidy: two-fifths of children in registered facilities do not receive a subsidy. The recent PETS survey⁸⁰ found that over 40% of ECD facilities had to wait more than two years to receive funding after registration (van der Berg et al., 2010).

Fact Six: The current institutional bureaucracy does not support increased provision of early learning opportunities for pre-R children

The government departments responsible for the provision of early learning opportunities for 4 year olds are severely underfunded, have limited human resource capacity, have demonstrated little success in providing the integrated services envisioned, and have other more visible and pressing welfare priorities.

Provincial Departments of Social Development are responsible for more than 80% of the cost of implementing the Children's Act (Budlender, Williams, Saal, Sineke, & Proudlock, 2011). Prior to the passing of the Children's Act in 2007, a costing project was commissioned to ensure Parliament was aware of the budgetary implications of the proposed bill. The ensuing report revealed that the provincial social development departments, as a whole, are only receiving 25% of the funding they require to implement their existing obligations. Early learning for children 0-4 years is only one of an array of responsibilities. The extent of under-funding is chronic. The report highlighted the gap between the government's good intentions on paper and the actual allocation of resources. The proper implementation of the services envisaged by the Children's Bill would have cost the government between R15 billion and R84 billion in 2010/11, with the more realistic estimates being around R44 billion. The analysis indicates that the majority of these costs (between 77% and 87% depending on scenario) are for existing obligations. From a budgeting perspective, the real challenge to government is therefore, not the cost of the new

⁷⁷ National information on the distribution of ECD facilities is dated to an audit in 2001, which found that children were enrolled in 23 482 ECD sites across the country, and were catered for by 54 503 practitioners. Of these sites, 60% were urban sites (49% formal and 11% informal) and the remaining 40% were rural sites. 57% of the ECD learners were catered to in community-based sites, only 19% of children were in school-based sites, and the remainder were in home-based sites. In only 25% of sites, was the equipment and learning materials rated as adequate (Department of Basic Education South Africa & Department of Higher Education and Training, 2011). Over 60% of sites had been operating for five years or longer (Kallmann, n.d.).

⁷⁸ DSD budget vote 2011/2012.

⁷⁹ Estimate based on number of children in registered centres compared with number of 0-4 year olds in any preschool or crèche.

⁸⁰ A 2009 Public Expenditure Tracking Survey (PETS) held in three provinces in more than 300 public schools offering Grade R, more than 300 community-based ECD facilities registered with the DSD, and 90 non-registered community-based ECD facilities.

obligations in the Children's Bill, but finding resources to address the under-funding of its existing obligations to deliver social welfare services to children (Barberton, 2006).

As the overarching legislative framework, The Children's Act, does not obligate national, provincial or local government to **fund** or **ensure provision** of ECD services or infrastructure. The Act only obliges the Minister of Social Development to develop a comprehensive national ECD strategy (Section 92(1)). Provincially, the Act obliges the MEC for Social Development, the lead department, to register, and to maintain a record of, all registered early childhood development programmes and, within the national strategy, to develop a provincial ECD strategy (Sections 92(2) and 95(1)). The Act does not oblige, but affords the MEC for Social Development the discretionary and unenforceable power to provide and fund ECD services (Section 93(1)) (Richter et al., 2012). Neither is there a mandate given to local government, as is envisaged by the NIP. No legislation obliges municipalities to build ECD centres, develop existing buildings into viable centres, or to improve the infrastructure and basic amenities at ECD centres servicing poor communities.

The DSD's ECD divisions are significantly under-resourced, resulting in insufficient capacity to undertake evidence-based planning, monitoring and regulation of ECD services (Richter et al., 2012), let alone provide an important support role. The PETS survey found that the DSD is simply not in a position to monitor ECD activities on the scale that these have now taken on (van der Berg et al., 2010). In a review by Giese and Sanders (2008), a reoccurring concern was the perceived inappropriate location of a multi-sectoral coordinating structure within the DSD.⁸¹ The structure was seen as a departmental, rather than a truly representative and independent structure, with insufficient political will and authority to hold other departments to account for specific deliverables, and limited capacity to drive a multi-sectoral programme of action. Almost four years after this review, the Diagnostic Review found few, if any, instances of integrated and multi-sectoral policies and programmes, of the sharing of resources, or of more efficient delivery of services through collaboration by the different departments (Richter et al., 2012).⁸² Its authors are clear: *'the current institutional arrangements are not sufficient to drive ECD forward in a coordinated way'* (Richter et al., 2012). The authors encourage a frank review of whether the location of responsibility for the

⁸¹ Operationally, as a combined initiative of the Departments of Education, Health and Social Development, the NIP has established various coordinating political and administrative structures: MEC Committees of the Social Cluster provide political leadership, ECD Inter-Sectoral Committees, and a National Inter-departmental Committee for ECD, led by the DSD on which sits the Departments of Health, Basic Education, Home Affairs, the Presidency and others (Richter et al., 2012).

⁸² Nor is this a purely South African problem. Many African countries (such as Eritrea, Ethiopia, Kenya, Zambia, and Zimbabwe) that are implementing ECD activities or newly adopted policies face constraints in the lack, or limited nature, of inter-sectoral coordination and cooperation at different levels (Garcia et al., 2008).

NIP and the Interdepartmental Committee for ECD within the DSD, as the lead department, has hampered the sector.

The NIP uses the term '*integration*' to describe an approach whereby services and programmes are provided in a comprehensive and interwoven manner, and relationships are developed between government departments, NGOs and communities with the aim of ensuring the holistic development of children. An integrated approach provides children with birth registration, health, nutrition, water and sanitation, psychosocial care, early learning, and protection (Biersteker, 2008b). The NIP recognised that integration is important for sustainable results, and notes international evidence that coordination between and within the different tiers of government and community organisations is a key success factor in providing ECD services (Biersteker, 2008b).⁸³ However, when policies, services, budgets and knowledge are organised according to sectors, (eg, health, education, welfare), it is difficult to organise roles, responsibilities and the allocation of resources across these different sectors. No one sector is responsible for the outcomes of ECD. The problem is not visible. Territorialism is not just a feature of governments: it also affects academia, donors, NGOs and a whole range of other actors. Integrated approaches can be time-consuming and labour-intensive to implement, and difficult to sustain. They often tend to rely on the willingness of individuals to cooperate at a given time.

The perceived complexity of implementing early childhood programmes is often cited as a bigger challenge than the lack of appropriate policies. If this is true, then efforts need to be made to reduce complexity in the ECD sector, for example, by concentrating on one aspect and supporting other sectors to slot in (Gertsch, 2009). However, when there is no strong commitment from the various sectors, it may be a misdirection of effort for ECD advocates to put too high a priority on arguing for integration. While some countries (such as Chile and Cuba) are often pointed to as examples of where an integrated approach has been achieved effectively, experience in others suggests that surmounting the practical obstacles can be so time-consuming as to make its value questionable. In South Africa, it is doubtful whether national and provincial interdepartmental coordinating structures have achieved more than departments working on their own would have done (Moreno, 2011).

⁸³ Beneficial effects of combined programmes have been found on the efficiency of delivery, cost savings, and effect (Engle, et al., 2007) (Dawes, Biersteker, & Irvine, 2008).

Fact Seven: ECD centres have become a focus for government support

The NIP stated that 80% of children should be reached through home- and community-based programmes, and recognised the need for a variety of ECD services and sites of delivery in order to increase access for the most vulnerable children (Moreno, 2011). This was further supported by the Department of Education's (2006) 'Massification of ECD' concept document as well as ECD's priority in the Expanded Public Works Programme. Whilst general ECD is a clear policy priority, subsequent implementation associated with these programmes have highlighted only a few ECD services: Early Childhood Care and Education (ECCE) and Grade R. The current system is geared around the inspection and registration of centres. Government officials even tend to associate the term 'ECD' with preschools, crèches and educare centres (Giese, Budlender, Berry, Zide, & Motlatla, 2011).

A study by Budlender (2010), exploring financing options for home- and community-based ECD, found that almost all the existing and "new" ECD money was allocated to support centre-based provision, in particular through the child-based ECD centre subsidy.⁸⁴ The current funding model does not make regulatory or funding provision for home and community-based ECCE services.

DSD staff and other role players are familiar with centres and do not widely understand the concept of integrated ECD (Moreno, 2011). The prevalence of this narrow prioritisation of the ECD is seen in the following statement by the current Minister of Social Development, Ms Bathabile Dlamini, in 2010 which speaks only to the educational component as the bedrock of ECD:

Early Childhood Development is one of the strategies to tackle child poverty and contributes towards human capital development. South Africa will only defeat the social and economic challenges it faces through consistent investment in education, which begins at the early ages of children's lives. ...we have placed ECD as our apex priority...(Richter et al., 2012).

This political commitment to centres is measurable. The aim of the Presidency's Apex Priority 11⁸⁵ is to double the number of children receiving DSD subsidies to 600 000, and to double the number of children enrolled in ECD through 1 000 new sites and the training and employment of more than 3 500 practitioners by 2014. The Minister of Social Development

⁸⁴ Indeed, some provinces have not allocated any non-centre-based funding for ECD. Even in Western Cape, which has been among the forerunners in funding of programmes, it is estimated that centre subsidies accounted for 97% of all ECD funding in 2007/08 (Giese et al., 2011).

⁸⁵ These 24 Apex priorities announced by the President cut across government departments, and are designed to form the basis of government's strategic thrust.

committed in 2011 to have 1 million 0-5 year olds accessing ECD services and programmes, standardising ECD subsidies to R15 per child per day over the MTEF, improving ECD infrastructure, and ensuring completion of the ECD curriculum for 0-5 years (Richter et al., 2012). These are simple, measurable goals, designed to hold officials accountable and encourage progress.

Fact Eight: An infrastructure void prevents the current funding model from scaling up

Government funding for child development has risen substantially in recent years, far outpacing inflation. It is understood that social security, free health care and Grade R provision all contribute to the reduction of inequality. There is, though, genuine concern that funding ECCE through per-child subsidies in registered centres does not.

The DSD per-child provider subsidy is targeted by a means test to reach poor children. In this, it has been successful. It is well targeted to reach children living in poverty and improve both their ability to afford ECD services and the overall quality of the services provided (van der Berg et al., 2010). It is not designed to cover the total cost of providing quality ECCE services. The subsidy amount has been increasing annually, and is under pressure to do so.⁸⁶

However, there is little, if any, state support for infrastructure investments, other start-up costs, or learning and teaching support materials, especially in centres in the poorest areas where the quality of services is worse (van der Berg et al., 2010). At the margins are poor children, including those in unregistered facilities, children living in rural and informal urban areas without access to centres, and children with disabilities⁸⁷ who have less access to registered centres. These children do not receive **any** subsidy support (Richter et al., 2012). As a result, in places where there are currently no services, there are unlikely to be services anytime soon. This leaves many areas of the country without ECCE services.

Herewith the problem: the per-child subsidy model does not provide for infrastructure development or maintenance: adequate infrastructure is required to meet specified standards for registration. The country cannot scale up provision by relying on existing infrastructure: new facilities must be encouraged and supported. There is currently no obligation nor voluntary assumption by the DSD or local government of the responsibility to fund infrastructure development, maintenance, or materials (Budlender et al., 2011). Instead,

⁸⁶ From a minimum of R9 per child per day in 2008 to R12 in 2010/11, and is currently R15.

⁸⁷ While the 2001 Census estimated a disability prevalence of 2.1% among 0-9 year olds, the PETS survey of 2008 found a prevalence of disability of only 1% among children attending ECD facilities.

the cost must be covered by either the subsidy or fees generated by the centre. This is extremely challenging for centres servicing poor communities that cannot afford high user fees. In under-serviced areas where there is no, or limited infrastructure, the current model relies on community-based organisations to establish the infrastructure, and to ensure that it meets the minimum standards in the Children's Act to qualify for registration and funding. This model of ECCE infrastructure development and growth keeps poor and underserved communities trapped into cycles of under-servicing.

Conclusion

South African children are presented with some unique challenges to their early learning potential. By the time children reach 4 years old their learning capacity may have already been significantly compromised by some of the most preventable health conditions. The families they find themselves in may not always provide stimulating and supportive home environments required for growing brains. Child poverty is persistent, severe and damaging, and is concentrated in geographically specific areas. While appreciably supported by government grants, very few children are exposed to any sort of early learning opportunities. Nor does the current institutional bureaucracy support increased provision of early learning opportunities. ECD centres have become a focus for government support, and yet an infrastructure void prevents the current funding model from scaling up.

Nor is there is enforceable state responsibility or legal grounds on which to compel the provision of ECCE services to children aged 0-4. Without legal accountability, it is unlikely that appropriate funding flows will be unlocked. The authors of the Diagnostic Review recommend an amendment to the Children's Act to stipulate that national and provincial government "must", rather than "may" provide and fund ECD services and programmes for the poorest children and children with disabilities (Richter et al., 2012).

The perceived complexity in implementing early childhood programmes is often cited as a bigger challenge than the lack of appropriate policies. If this is true, then efforts need to be made to reduce complexity in the sector. The demands of an integrated approach in terms of complexity, cost, time, labour, capacity, and political will may outweigh the benefits, if there are other ways to ensure effective approaches. The next best thing to an integrated strategy where ownership is multiple, is for a strong lead agency to be given ultimate responsibility for early learning outcomes and take the lead in encouraging and supporting other sectors to participate. The principal of integration is not questioned, but perhaps the current narrow focus on centres should be recognised as a result of this. There is ambitious policy, limited

implementation and coordination capacity, and therefore simple interventions that can be measured have come to dominate.

The infrastructure problem can only be resolved by the State building or supporting the development of ECD centres, whether community-based sites or in public school sites, and linking ECD services to existing infrastructure and systems. While the registration of centres and access to provider subsidies may be imperfect and experiencing a severe backlog at present, the system has shown to be well targeted. More importantly, registration requirements may be an important lever to manage quality. As Myers (2004) points out, assessing the quality of provision in ECCE is more challenging than for schooling. Dawes et al (2007) recommend that, given the limited resources of the South African context, a gross but workable measure would be the extent to which services comply with the DSD registration requirements. Finally, there are a few efficiency solutions available to address the current subsidy blockages: funding can immediately be made available for the approximately 25% of registered facilities that receive no subsidy; the registration process can be simplified; and the requirement for dual registration removed.

Chapter Three

Reflections on the Grade R scale up

This chapter aims to explore what is being learnt about ECD expansion models that work in the current South African environment by examining the recent scale up of Grade R since 2001. In critically examining the lessons of the scale up for the ECD sector, it takes a closer look at the drivers of the expansion model in the Eastern and Western Cape provinces, as examples of two fairly different experiences. It will examine two chief hypotheses central to the scale up process: firstly, the provincial discretion in the financial allocations for Grade R, which provided for faster roll-out, may well have sacrificed quality service provisioning in return for affordability within provincial budgets. Secondly, the tension between two different models of provision, community or public, and its concomitant time bomb of Grade R practitioner compensation issues, will be resolved more in the interests of the practitioners and their representatives, than those of the children for whom this policy has been created.

Scaling up often leads to trade-offs. At what age should services begin? What is the best approach to sustaining the gains from earlier programmes? Is a sub-optimal early learning programme better than none? These are difficult choices that must be made in the context of all the services available to children in the community and their particular needs (Moreno, 2011). Scale-up can often be facilitated through the use of existing infrastructure, as described in this chapter, by the grafting of Grade R onto the school system. It can also be achieved more quickly through a compulsory mandate and a roll out of infrastructure, as demonstrated in examples of many South American countries. More often, scaling builds over time and needs continuous improvement and political will.⁸⁸ The Grade R scale up provides both some critical encouragements and warnings to those petitioning for more resources to the ECD sector.

The Grade R scale up: Financing and Institutional Framework

To address inequalities in household background and the deep poverty faced by most of its children, South Africa introduced a year of formal preschool in 2001, the most significant

⁸⁸ The Head Start programme is an example of an incremental scale up: after 45 years, Head Start is still serving less than half the eligible preschool children in poverty and only about 5% of the eligible infants and toddlers (Moreno, 2011).

public sector policy commitment ever to ECD in South Africa (Biersteker, 2010). While such programmes were quite common amongst white children, they were almost unheard of in black communities before the mid-1990s. The option of lowering the age of admission to state schooling to include a reception year, follows the route taken by many developed and developing countries (Biersteker, 2010).

Against a background of ferocious pace in policy and school reform after 1994, the arguments for ECD which tended to generate most fiscal appetite seemed to have been those which emphasised its role in enhancing schooling outcomes, and this tended to favour preschool services. In 2001, with the release of White Paper 5 (WP5) on Early Childhood Development, there was a policy '*jump*' (Porteus, 2004) which singled out five-year-old children as the focus of provisioning. The policy put forward the establishment of a national Reception Year, with 85% of provisioning based in public primary schools and the remainder at accredited community-based sites or through independent provision. The policy was clear that, with some additional investment in building rehabilitation, the country's existing 23 000 strong primary school system provided the wide access and coverage needed to scale up ("Education White Paper 5 on Early Childhood Education," 2001). Responsibility for the Reception Year (Grade R) fell to the Department of Basic Education (DBE), phased in as a first year of the Foundation Phase of public schooling,⁸⁹ though it is not yet compulsory (Biersteker, 2010). Over three-quarters of public ordinary schools offer Grade R (Bot, 2011).⁹⁰ The 2009 Medium Term Strategic Framework (MTSF) of The Presidency includes a key goal relating to Grade R: there is to be 'universal access to Grade R' by 2014 (Gustafsson, 2010). The DBE aims to increase participation in public school Grade R to 80% by 2014 (100% if community-based institutions are included), and to 100% by 2019.⁹¹ The responsibility for the 0-4 year old cohort was largely shifted to the Department of Social Development.

Since the introduction of Grade R, there has been an impressive increase in learner numbers, with an average expansion rate since 2004 of about 43 000 children per year. Between 2001 and 2010, Grade R enrolment increased by 197%. Even so, there were still

⁸⁹ Foundation Phase: Grade R – Grade 3, or children 5 through 8 years

⁹⁰ This does not necessarily mean that public schools are able to accommodate all learners who want to attend that grade. For example, a school may have one grade R class but several grade 1 classes (Bot, 2011).

⁹¹ In schooling above Grade R, South Africa is on a par with, or even above, what is considered to be a feasible target for participation in education (participation rates at 95%), especially for a developing country (Taylor et al., 2008). Achieving 100% participation is considered to be a challenge for all countries, even developed countries, as enrolling the last 5% to 10% of children will necessarily include a high proportion of children from very "marginal" groups.

almost 400 000 fewer children in Grade R than in Grade 1 in 2010⁹² (Bot, 2011). Gustafsson (2010) reports that around 57% of South African children were going through Grade R in 2008, according to the National Income Dynamics Survey (NIDS) First Wave 2008. However, if learners currently enrolled in Grade 1 are asked whether they underwent 'pre-primary or Grade R' before starting Grade 1, a much higher figure of over 80% is obtained. This 80% figure shows a marked and rapid improvement, as only 60% of Grade 4 learners say they went through some form of pre-primary schooling. The 80% level is also very close to the sum of the 59% formal preschool and 19% non-formal preschool values found in the Annual Survey of Schools dataset. The extent to which primary school learners have undergone some pre-primary schooling is lowest for the poorest income quintile at 60%, with the ratio of 90% for the highest quintile (Gustafsson, 2010).

Provincial coverage differs in major ways: Grade R in the poor provinces of the Eastern Cape and Limpopo appear to have achieved extremely high levels of coverage (about 91% and 96% respectively) versus 36% in another poverty stricken province, KwaZulu-Natal and only 57% in the relatively well-off Western Cape (van der Berg et al., 2010). Poverty is commonly believed to inhibit pre-primary participation, and thus given the levels of poverty in the former two provinces, this finding is surprising (Gustafsson, 2010), and a real achievement for the provinces. The wide disparity between implementation rates across provinces may suggest that some provinces will not reach universal access by the due date of 2014. The Provincial Education Departments have, however, indicated to the national DoE that they are on track. Table 1 summarises provincial coverage and financial data.

⁹² It is often thought that where Grade R is not offered in schools, schools allow children to enter Grade 1 a year earlier. The data do not support such a hypothesis, even though there is real variability in the ages of children in various enrolment types: only 65% of learners enter Grade 1 at the correct age; almost exactly half of the remaining 35% enter Grade 1 too early, and the other half enter too late (Gustafsson, 2010).

Table 1: Provincial coverage and financial data for Grade R

Province	Eastern Cape	Free State	Gauteng	KwaZulu Natal	Lim-popo	Mpum-alanga	Northern Cape	North-west	Western Cape	TOTAL
% of children in Grade R (NIDS 2008) (van der Berg et al., 2010)	91%	49%	35%	36%	96%	44%	45%	52%	57%	55%
Numbers of children (NIDS 2008) (van der Berg et al., 2010)	125 625	23 615	65 732	82 920	118 259	40 886	9876	45 585	53 952	566 450
Schools offering Grade R (Bot, 2011)	91.4%	37.7%	70.6%	85.6%	83.8%	70.4%	72.1%	66.2%	73.7%	78.6%
Grade R budget 2011 (Richter et al., 2012)	R539 922	R81 727	R583 746	R608 363	R445 775	R243 195	R302 866	R115 264	R320 922	R3241780

The discussion will benefit from a brief contextualisation of Grade R expenditure against the aggregate national education spend, and a review of the South African budget process. In terms of medium term domestic trends, educational expenditure had a brief sharp increase in the years immediately following the 1994 elections, and then again in 2003. However, public education expenditure as a proportion of gross national product has been on a downward trajectory, with spending patterns on education at about the same level now as 1987 (Taylor, Fleisch, & Shindler, 2008). It is in this light that one needs to view the tremendous new investment challenge of Grade R which aims to add almost a million children to the education system.

The institutional system for funding Grade R is quite complex. The model adopted was through a preliminary conditional grant over three years; then from 2004/5 Grade R became an item for the provincial education department budgets.⁹³ National government can

⁹³ The South African government consists of three spheres: national, provincial, and local government, with significant decentralisation of powers and functions, including budgeting. The primary role of national government is to shape policy, and the role of the nine provincial governments is to implement policy (Jansen & Taylor, 2003). The revenue-sharing approach is a fundamental feature of the fiscal system: the provinces receive approximately 44% of the allocation while national government receives approximately 48% and local government approximately 8%. In terms of the Constitution and national legislation, the budget process is based on a rolling budget system adopted in 1998, which begins with Medium Term Revenue and Expenditure Framework (MTEF). It allows the government to plan its spending over a three-year horizon in line with its medium-term policy priorities (Pauw & Mncube, 2007). Both national and provincial education departments assess their needs and plan how to address those needs. However, the final decision on the allocation to each

influence funding at provincial level to some extent, but mainly through the proportion of fiscal resources that flow to provinces as conditional grants. There is a well-known phenomenon whereby funds provisionally “allocated” at the national level through the provincial funding formula to provinces for a specified purpose, are reallocated by the provincial governments, who have budgetary discretion except over conditional grants (van der Berg et al., 2010). The preliminary DoE budgets for Grade R show considerable growth, but in practice budget allocations are a poor indication of how much funding will be allocated for ECD at provincial level: competing priorities in the provincial budget processes and insufficient prioritisation of ECD have, and may continue, to lead to insufficient allocations being made by Provincial Treasuries (Biersteker, 2010). However, despite the lack of legislative compulsion to do so (until the passing of the 2008 Norms and Standards), most of the provinces have continued to provide resources for Grade R expansion. ECD continued to garner political will and profile, particularly through fitting in with one of the government’s leading short-term poverty alleviation programme, the Expanded Public Works Programme (EPWP). Provincial Education Department budgets for Grade R have risen from R377 million in 2003/4 to a budgeted R983 million in 2007/8, and R3 241 million in 2010/11 (Van der Berg et al, 2010).

This institutional complexity is increased by the fact that many Grade R children attend Grade R in community-based institutions (van der Berg et al., 2010). Since 2001, the government has funded Grade R in two ways. Firstly, provincial governments funded grants to community-based ECD centres on a per-learner basis. Secondly, a direct grant in aid from provincial education departments to school governing bodies (SGBs) which employ the teachers, finances Grade R in public primary schools. SGBs receive subsidies for each appropriately-aged child at the rate of 70% of what it costs for a child in Grade 1, as recommended by White Paper 5⁹⁴. The DBE’s ECD programme, of which Grade R dominates, accounts for a small share of the overall provincial education budgets, but the share has increased markedly over time, from zero in the 1996/7 budget year, to 0.9% in 2006/07, and to just over 2% in 2012/13 (Giese et al., 2011). Many believe that the MTEF

department is dependent on the processes around the division of revenue. While division of the annual budgets between the three tiers of government, national, provincial and local is negotiated, the provincial share is formula-driven based on various factors such as population and poverty levels. Once each provincial allocation has been determined, the ways in which these allocations are first, distributed between the sectors and, second, spent within each sector, are entirely at the discretion of the respective provincial legislatures (Taylor et al., 2008).

⁹⁴ In the interim rollout phase, in order to cover a larger number of schools, this was allowed to have been lower: down to a minimum of 50% of the Grade 1 learner cost, as determined in consultation with the national department and provided that standards were not compromised. In 2003, spending per child in Grade R was on average only about 35% of funding levels for Grade 1 children.

does not show it to be growing fast enough for the phasing-in of a *quality* Reception Year (Biersteker & Dawes, 2008).

Four key reflections on the emerging analytic narrative of Grade R

Reflection one: A central unresolved tension exists between public and community provision

From the beginning of the policy process and even now, there is an unresolved tension between two models of preschool: a community-based, multi-age-group model of provision built on private/community initiative on the one hand, and a school-based model emphasising the public provision of Reception Year education on the other. The national scale up of Grade R was proposed on a cost and incentive framework which relied on community and private provision. However, the policy recognised the insufficient capacity of the community sector to absorb nearly one million 5-year-olds, and modelled its provision in public ordinary schools instead. There was a clear mismatch between the expected cost framework and the realities of public provisioning.

The 1997-1999 National ECD Pilot Project had indicated that the provision of Grade R at community sites was substantially cheaper for the DoE than providing similar education at schools. This was because of low practitioner salaries and parents' contributions of food and other costs.⁹⁵ In order to have an affordable option for the introduction of Grade R, the funding mechanism in WP5 made use of the fact that community-based sites operate at a lower cost and proposed a funding system which would enable a combination of the lower cost of community-based centres, while putting school-based Grade R within easier administrative reach of provincial education departments for quality control and accountability (Biersteker, 2010). So while, as will be seen, the policy is in effect unsupportive of the community-based sector, it tried to incorporate the '*reduced costs*' associated with '*using community energies and relative informality*' seen in community- and home-based sites.⁹⁶ Porteus (2004) pulls no punches in her assessment that the economic

⁹⁵ The 2001 national ECD audit suggested that 75% of funding for ECD services derived from private sources. Gustafsson examined fee levels through the 2008 NIDS data and found fees in pre-primary are slightly higher. This is to be expected given the more private nature of pre-primary schooling as opposed to primary schooling. However, for 80% of the country the average fee is still below R100 annually (Gustafsson, 2010).

⁹⁶ At the time, the average monthly community-based practitioner's salary was only R688 compared to an average full-time teacher who earned approximately R6 700 per month ("Education White Paper 5 on Early Childhood Education," 2001).

model behind WP5 incorporated one of the most exigent aspect of ECD services, namely the '*systematically-underpaid practitioners*,' rather than challenging these low salaries which reflected '*apartheid policies of neglect*.'

Based on a cost index value of 1 for public primary school, Reception Year provision in schools has an index of 0.7, and in community-based centres of 0.4. Recognising the priority of ECD as a social investment, WP5 examined trade-offs of ECD expansion against other educational goals and concluded that there was a reasonable claim for ECD consuming 15% of the budgetary space created by economic growth, demographic transition and efficiency gains ("Education White Paper 5 on Early Childhood Education," 2001). An incremental expansion and lower cost model was therefore introduced, with the argument taking a more human capital investment line rather than a child rights rationale (Biersteker, 2010).

The crowding out of private resources through drawing Grade R largely into the public schools has been unfortunate. White Paper 5 foresaw this to an extent, but anticipated that freed up private resources would still be spent on children. It understood that the system would change dramatically from a system that was approximately 75% privately funded to one that is approximately 75% publicly funded. It was confident that parents, families and communities would not simply reduce by an equivalent amount the levels of private investment they currently make in ECD, but will instead refocus at least part of their funds on ECD services for children 4 years of age and younger. The policy goes so far as to state: '*the fact that the Reception Year will be more subsidised than is currently the case will encourage school governing bodies to provide coverage for earlier grades*.' ("Education White Paper 5 on Early Childhood Education," 2001). A major expansion project such as this may have been smarter in harnessing all available resources (Technical Assistance Unit: National Treasury South Africa, 2008). The community-based ECD sector was weakened by the limit placed on their Grade R provisioning of 15% of the national total, and the effective removal of their five year old cohort to the cheaper public school system, which left them with younger (and more expensive, given their higher required staff-child ratios) children. Notwithstanding this, given the challenge of introducing systems, supporting, monitoring and evaluating them, it has to be concluded that despite its inadequacies, the primary schooling system is a realistic and convenient vehicle for Grade R, which is also less vulnerable to political change (Biersteker, 2010).

Reflection two: Coverage and funding is provincially determined

The implementation of the Grade R scale up is heavily dependent on the effectiveness of the provincial departments of education. The variation in coverage across the provinces largely reflects the provincial commitment to Grade R, but is also influenced by coverage in community sites, in which child numbers are difficult to validate. IDASA's review of provincial education budgets reports that within education budgets, the most unequal inter-provincial spending is found in ECD programmes⁹⁷ (Wildeman & Hemmer-Vitti, 2010). In ECD, provincial education departments have vastly different universal access attainment rates and different fiscal capacities. While rural provinces have the poorest access to most services, it is the former 'homeland' provinces of the Eastern Cape and Limpopo that have the highest coverage percentages in the public school system. This may well be attributed to a historically underdeveloped community Grade R system in these provinces, and the fact that these provincial departments prefer the use of public schools.

The National Norms and Standards for School Funding (NSSF), which legislated Grade R funding for the first time in 2008, provided for significantly better financial resourcing on a targeted pro-poor basis as well as for a minimum package of inputs, and afforded a significant lever for the national DoE to improve provincial funding levels. It allowed for an increase in public funding through the provinces for Grade R provision, with more favourable per-learner funding for poorer schools to acquire additional materials or to ensure better educator-learner ratios: the poorest 40% of public schools receive the highest per capita grants (The Presidency South Africa, 2009).⁹⁸ Jansen and Taylor (2003) argue that despite the fact that the NSSF seeks to reduce inequalities between and within provinces, the differentiated capacity and commitment to redistributive funding across the provinces has in fact increased inter-provincial funding differences.

Taylor et al (2007) assess the performance variation across and within provinces and describe the predominant '*low levels of functionality*' at provincial head offices, which is often more acute at the district levels. Numerous restructuring and redesign initiatives and considerable instability have undermined the capacity of district officials to provide support and monitoring services to schools. The 2008 National Treasury Report on Grade R relates that in most provinces, Grade R funds are not delegated to districts, but are rather held centrally and paid directly to providers, contractors, schools and suppliers (Technical Assistance Unit: National Treasury South Africa, 2008). Moll (2007) echoes these findings by

⁹⁷ The coefficient of variation is a measure of the extent of concentration around the average spending value among the nine provinces. A value that is closer to 0 indicates greater inter-provincial equity, while values closer to, and more than 1, indicate a large degree of inequality: for ECD it is reported at 1.05 (Wildeman & Hemmer-Vitti, 2010).

⁹⁸ The bulk of government spending on schooling is not redistributive: it is on salaries. The funds available on the non-personnel budget are extremely limited because of high personnel costs.

describing '*moderate to severe undercapacitation*' in the provincial offices responsible for the implementation and monitoring of Grade R.

To what extent does finance account for the problems of unequal coverage and quality? Taylor et al (2008) argue that finance, specifically per capita expenditure, is not a major factor driving poor quality of the system. Basic education in South Africa remains one of the most inefficient and ineffective in Africa, despite the disproportionate per-capita amounts spent on South African pupils⁹⁹ (Jansen & Taylor, 2003). Even when the fiscal base for supporting critical initiatives is available, there is limited management capacity to implement such programmes evenly and expeditiously in the various provinces.

The Eastern and Western Cape provinces provide an example of such variability. Detailed budget analysis of the Eastern Cape (EC) and Western Cape (WC) provinces' financial commitments over the last ten years reveal the following pertinent information:

- Based on the equitable share allocation, the EC's education budget is just over double that of the WC, and has remained consistently so for the last decade.
- The ECD programme of both the EC and WC has stabilised at about 2-3% of its equitable share allocation, but has grown from an almost non-existent base in the EC.
- Expenditure in the WC on Grade R in community centres represents a third of that which is spent on Grade R in public ordinary schools. The EC spends negligible amounts on Grade R in community centres: approximately 1% of budget.
- Personnel numbers in ECD represent the most startling difference between the provinces. The EC employ over 5000 ECD employees in contrast to the WC's approximate 200. The employee growth in the EC dates from 2008 (possibly coinciding with the NSSF) with over 3000 staff added that year. Relatively however, this number only represents 6% of the EC's total staff contingent versus 1% in the WC. Unsurprisingly personnel costs in the EC have shown enormous growth since 2008, and are 64% greater than those in the WC.

The provincial strategies of these two provinces towards Grade R seem similar, despite appearances, for example 91.4% of schools in the Eastern Cape offer Grade R in comparison to 73.7% in the Western Cape.¹⁰⁰ This is corroborated by the strategy reported as far back as 2007 in the Eastern Cape's budget: *All community based centres must have*

⁹⁹ According to UNESCO, only three sub Saharan African (SSA) countries – Botswana, Mauritius and South Africa – invest more than PPP\$1,000 per primary pupil (UNESCO, 2011).

¹⁰⁰ Eastern Cape: 4413 schools offering Grade R; 379 schools with Grade 1 but no Grade R
Western Cape: 783 schools offering Grade R; 377 schools with Grade 1 but no Grade R (Bot, 2011)

been incorporated into all primary schools (Department of Education: Eastern Cape, 2007). Similarly, the Western Cape Department's emphasis seems to focus on getting schools to establish Grade R classes. In recent research by Giese et al. (2011) an official confirmed this by saying that performance targets are set in relation to the registration of new Grade R classes at primary schools, not new community-based Grade R (Giese et al., 2011). There is a key difference: the Western Cape still supports Grade R provision in community centres to the amount of over R60million a year, in comparison to the Eastern Cape's R2.6 million.

In sum, by sustainably embedding the Grade R scale up within provincial education departments, the coverage, quality and funding it has achieved and received has inevitably been provincially determined, reflecting the capacity of the provincial education department responsible.

Reflection three: Quality has often been compromised by the scale up process

Access has been a primary thrust of international policy guidelines, such as the Millennium Development Goals and Education for All, and seemingly, South Africa's Grade R expansion. However, the stress on country-level enrolment as an indicator of progress could be considered a limited approach to improving equity in ECD. A sole focus on expansion and access to ECD is not always accompanied by improvement in quality of services, and can yield mixed results in the achievement of actual improvement in children's outcomes (Yoshikawa et al., 2007). Grade R has proven a relative success in significantly expanding coverage within a decade. However, the fact remains more generally that while access is not the principle problem in South Africa education at present, quality certainly is (Jansen & Taylor, 2003), a concern echoed by the DBE in its Action Plan 2014.

From the 1970s, South Africa expanded access to secondary schooling faster than the United States or Europe, and much faster and further than any Sub-Saharan African country. Total access stood at around 30% in 1970, with white children close to 90%; by 1995, total access had risen to over 90% (Taylor et al., 2008). And while most countries have managed to find a reasonable balance between access and achievement, Southern African countries, of which South Africa is the paradigmatic case, have not managed to achieve this balance. It is argued by many that the roots of the poor quality of South Africa's schools lie in the rapid expansion of the system, with some maintaining that the DoE is set to replicate this mistake in the Grade R subsector (Taylor et al., 2008).

Importantly however, this does not imply that the country should have expanded access more slowly in order to build quality at the same time: both political pressure and moral

argument dictated that schooling be expanded as fast as possible in order to provide black children with educational opportunities. As Taylor (2011) justifies '*Weakness of the technical core of schooling is not principally the fault of the present government, having deep roots in the explosive expansion of school provision..., in unjust apartheid financing patterns, and in the need to radically restructure the bureaucracy in 1994 for reasons of both equity and efficiency*' (Taylor, 2011). But the improved access provided to poor children does not provide equality of opportunity, and this situation will remain until the quality issue is addressed decisively (Taylor et al., 2008). As Biersteker (2008b) explains, equitable educational access means more than simply physical access to school: it means access to education that is meaningful. More than full enrolment, meaningful education requires high attendance rates, little or no grade repetition, and learning outcomes that confirm the mastery of basic skills. The concern is that the DoE is expanding Grade R provision too rapidly, without adequate teacher preparation, and without establishing the requirements for effective preschool classes through a well-researched pilot and careful rollout plan. The Treasury investigation suggests that numerical targets are prioritised, at the expense of quality implementation (Technical Assistance Unit: National Treasury South Africa, 2008).

There are huge variations across provinces in Grade R sites, teacher salaries and qualifications, provision of training and equipment, and most importantly, variations in quality. So while there is 91% coverage of Grade R in the Eastern Cape with financial expenditure of over R500 million annually, has the Reception Year in this province assisted children to be literate, numerate and life-ready at the required levels? The authors of the 2008 Eastern Cape Department of Education research raise the same question when reviewing the evidence of illiteracy of children in Grade 6.¹⁰¹ It reported on the exceptionally low quality of learning and teaching in the 250 Reception Year classrooms visited,¹⁰² and questioned whether the conditions were not in fact harmful to the wellbeing of children, and whether the province's Grade R year will assist in raising the levels of literacy, or simply be absorbed into the status quo, becoming part of the problem (SAIDE, 2010).

To date, there has been very little monitoring of children who have completed various preschool or Grade R options. Little is known about the quality of preschool services, and there is scant examination, apart from the PETS survey, of the resource conditions in publicly-funded Grade R classes. Researchers are yet to assess the efficacy of existing Grade R programmes, whether the present expansion in funding for this programme is

¹⁰¹ Eastern Cape learners perform among the worst in the country, and way below the average of the southern African region in reading and mathematics. In fact almost 40% of its learners are functionally illiterate, and there are more functionally innumerate students than functionally numerate students (Spaull, 2011).

¹⁰² The report found fully competent ECD programmes existing in only 5% of the 250 schools.

justified, and whether existing financial allocations are meaningful in terms of what the programme wants to achieve. As an alternative, Grade R efficacy can be inferred from a variety of evaluations. Nationally there is the National Income Dynamics Survey (NIDS). Internationally, there are a few cross-country comparative studies: Progress in International Reading Literacy Study (PIRLS) (Grade 4 and 5 reading) and Southern and Eastern Africa Consortium for Monitoring Education Quality (SACMEQ) (Grade 6 reading and maths). The message coming from the international studies is unambiguous: South Africa performs poorly compared with many of its more impoverished neighbours, and very poorly in relation to developing countries in other parts of the world (Taylor et al., 2008). But what can we uncover about the impact of Grade R participation on the level and quality of educational outcomes?

Analysing NIDS 2008 data, Gustafsson (2010) found that within **urban formal** contexts, learners in primary school who received pre-primary schooling perform better in numeracy tests than those who had not.¹⁰³ In **rural informal** contexts, the positive impact on preschool appears to be more robust and independent of home background. In an analysis of SACMEQ III data, students who have been exposed to at least one year of quality preschool education perform better in maths and literacy tests in primary school than those with little or no preschool exposure (Spaull, 2011). Learners with longer durations of preschool experience had higher scores in reading and mathematics.¹⁰⁴ A four nation comparison of the SACMEQ data shows that the majority of Namibian (70%) and South African (68%) Grade 6 students attended at least one year of preschool education, with a significant proportion attending for 2 years or more. In contrast, the majority of Mozambican (74%) and Botswana (60%) Grade 6 students did not attend preschool at all (Spaull, 2011).

In general, the PIRLS study showed South African *Grade 5* learners achieving **the lowest score** compared to *Grade 4* children in the 39 other countries that participated.¹⁰⁵ Internationally reading achievement was lowest amongst learners who did not attend preschool (a reading score of 455) and highest amongst those who attended for three or more years (a reading score of 510). The reports from the South African sample show a greater mean achievement: 259 for the 86% of learners who attended at least one preschool

¹⁰³ It is once again important to take into account the selection effect outlined in Chapter One: educated and advantaged households are more likely to send their children to preschool, and some of what appears to be the benefits of preschool, are in fact the benefits of home background factors.

¹⁰⁴ The mean scores of learners in reading were 449 points for learners who indicated they had never attended preschool while those who had three or more years' experience had a mean score of 555. In mathematics the mean score of learners who never attended preschool was 463 and those who had three or more years' experience achieved a mean score of 541.

¹⁰⁵ South African Grade 5 learners were approximately 200 points below the international average score of 500 fixed for the reading literacy of Grade 4 learners internationally (Howie et al., 2006).

year, and 236 points for the 14% who did not attend preschool. There is not a substantial difference in achievement for learners who spent one year compared with those who spent 3 years at preschool (Howie et al., 2006). The authors speculate that the absence of association between time spent in preschool and learning achievement almost certainly points to the fact that the quality of preschool varies enormously in South Africa, and that it would appear that one year of quality provision is as good as 3 years of poor quality provision (Taylor et al., 2008).

The relatively impressive speed of the scale up has produced casualties in quality provisioning that actually improves children's outcomes. Much of the argument for a pre-R year rests on the demonstrable impact that Grade R has on children's learning trajectories, and risks being compromised by this tactical blunder.

Reflection four: The conundrum of practitioner salaries and qualifications

The affordability of introducing Grade R into a system which had many other demands, and which in 2001 constituted a mere 0.28% of provincial education budgets, made it a hard sell (Biersteker, 2010). The DoE had to persuade the Treasury that WP5 did not provide for an additional cohort of ECD practitioners that would inflate already high education personnel costs (Fiske and Ladd 2004).

First, what are the qualifications of these practitioners? The Draft Findings of the 2009 HSRC Teacher Qualifications Survey¹⁰⁶ provide some interesting insights into the qualification status of Grade R teachers. In the sample there were 374 Grade R teachers, of which only 42% had a professional teaching qualification. Of the 42% with recognised professional qualifications such as a Teacher's Diploma, only 12% had a specialisation in pre-primary teaching. Less than 5% of those Grade R teachers without teacher qualifications (i.e. the other 58%) had ECD/ABET qualifications. Those who are qualified mostly have the old teaching diploma, rather than a qualification from a Higher Education Institution (HEI) (Umalusi et al., 2010).

Compare this against the fact that educator qualifications in the general schooling sector have quite recently risen dramatically: in 1990, only 53% of educators were appropriately qualified, and by 2008 this had increased to 94.4%. However, despite this significant increase in qualification status, the quality of schooling remains well below expectations and

¹⁰⁶ The survey was of a statistically significant sample of schools nationally. 7380 serving teachers in 580 public schools completed survey questionnaires.

has shown no improvement in the last 15 years (Taylor, 2011). There seems to be a large gap between the qualifications provided and the capacity required to teach effectively: an important distinction between qualification and competence.¹⁰⁷ Even WP5 speaks to the lack of evidence that formalisation of the qualifications of ECD practitioners leads to improvements in quality of provision, and highlights that such formalisation tends to raise costs ("Education White Paper 5 on Early Childhood Education," 2001).

Second is the issue regarding the level of their remuneration and how it is paid. One key feature of the 2008 NSSF was the provision for the establishment of posts for Grade R. Provinces could decide to convert a portion of the total allocation to a Grade R site into a post or posts, determined annually. The only condition was that the allocation should cover both the personnel and non-personnel costs and should not exceed recommended personnel/non-personnel expenditure ratios. This did not, however, provide for Grade R teachers to be employed on the same basis as other teachers in the schooling system, and the dual position introduced with WP5 persisted (Biersteker, 2010). The personnel amount is retained by the PED and practitioners paid by the PED. This alternative to the employment by the SGBs of the school from their allocation for Grade R as was originally provided for in WP5, seems to have become the preferred model for all the provinces (Department of Education Communication to Parliamentary Portfolio Committee, June 2008). Biersteker is convinced that this provides more stability for educators which may be conducive to quality, and is thus an important gain (Biersteker, 2010). The Treasury report reflects a similar sentiment,¹⁰⁸ and suggests incorporating Grade R practitioners into the Post Provisioning Norms and paying salaries directly from the DBE via Persal (Technical Assistance Unit: National Treasury South Africa, 2008).

Van der Berg et al. (2010) offer an alternate perspective in their recent Public Expenditure Tracking Survey (PETS). This large study focused on three (anonymous) South African provinces and revealed the large salary differences between teachers in different provinces: Grade R teachers in Province 1 received only R5 347 on average, those in Province 2 received R8 553 and those in Province 3, R9 524. The salary deficit in Province 1 arose largely from the fact that fewer Grade R teachers in that province were paid directly by the Department of Education, but rather paid from contributions by parents through the school governing bodies. They usually receive far lower salaries than those employed at the official public sector salary rates. Salaries of those paid through the public sector salary system

¹⁰⁷ Taylor goes on to recommend that any programme designed to improve capacity must be guided by a set of competence standards for the jobs in question (Taylor, 2011).

¹⁰⁸ It describes the process for paying subsidies that are used for payment of stipends/salaries to practitioners as 'very bad'.

(Persal) were on average R10 611 per month, whereas those paid not paid through Persal (i.e. direct payments to teachers) receive less than half of that amount at R4 503. In ECD facilities, some more affluent (and therefore unsubsidised) schools and facilities obtained good staff at less than half the cost of similar staff paid through Persal. It was apparent that there are staff willing to work at lower salaries than the DBE norm, where they are paid through SGBs or community-based ECD facilities. Analysis of salary differentials across the quintiles showed them to be small: in the bottom quintile, average salaries are R7 774, whereas they are at their highest in the second quintile, at R8 675, and in the third quintile at their lowest at R6 273 (van der Berg et al., 2010).¹⁰⁹

This evidence led the authors to recommend explicitly that it is generally better to fund schools or facilities and allow them to hire staff than to appoint more personnel on Persal. They argue that more staff and other services could thus be afforded, implying lower class sizes and greater employment of ECD practitioners, if schools or facilities are given the resources and discretion to employ appropriate staff rather than if appointments simply are made on Persal (van der Berg et al., 2010).

There is pressure on the system from practitioners and their unions to get onto the generous government payroll. This is evident in the quick migration, the 'train and drain' phenomenon, of newly qualified ECD practitioners moving into state Grade R positions (Giese et al., 2011). As seen in the brief analysis of the Eastern and Western Cape provinces, rapid provincial personnel employment, despite the absence of suitable qualifications, has been the Eastern Cape's model of expansion. The Western Cape, represented by Province 1 above, has not increased its direct employment ECD personnel numbers at all. In institutionally weaker and more politically charged environments, job creation may tend to become the chief goal of ECD expansion, rather than a means to an end – that of improved child outcomes.

Conclusion

Much has been achieved in ten short years by the creation and roll out of a state provided Reception year. The strength of Grade R in the public school system is that it builds on a well-established base, whatever its deficiencies. The infrastructure is better in public schools, lesson plans are more often prepared, and the system of accountability to parents in the form of SGBs is established and legislated. Also, the greater formalisation means that

¹⁰⁹ This third quintile of schools is perhaps the one that is most under resourced in terms of Grade R, as incomes are too high to receive support from the DoE, but parent incomes are generally too low to afford high salaries to be paid to teachers from the SGB funds (van der Berg et al., 2010).

the National School Nutrition Programme (NSNP) services the majority (71%) of public schools, providing nutrition for Grade R children.¹¹⁰ Given the critical nature of nutrition for early child development, this alone is a significant achievement of the scale up thus far. However a significant number of learners still do not attend grade R, negatively affecting their school readiness. And the five year olds that do manage to secure a place in the public education system, join an environment with inadequate literacy and numeracy results, high repetition and dropout rates, and a 40% chance of passing matric. Has the creation of this extra year simply become part of the problem instead of a possible solution to a system in crisis?

After a decade of scale up, it seems as if Grade R children are locked into system of predominant state provision, and the state is locked into a losing battleground of expanding personnel numbers, high salaries for untrained practitioners, expensive upskilling/training responsibilities and little or no private contribution to this project. Was this capture by quick thinking unions requiring a low skills injection into their declining membership base? Or was it simply a function of poor budget control by institutionally weak provincial departments at key moments? The answer is not clear.

Biersteker (2010: 55) presents a fascinating observation: *'It is perhaps no surprise that it was education policy that drove ECD services, as education organisations had played a key role in the liberation struggle'*. The critical element of political economy has been absent from most analyses of this scale up. What role have these key players played in improving the outcomes of young children, and what actions are more similar to those of predation by special interest groups that stifle commitment to learning (Taylor, 2011)? There may well have been factors beyond financial resources that have driven the scale up process at the provincial level, as seen in the Eastern Cape's rapid practitioner growth. In the breeding grounds of bureaucratic bad practice and political instability of provincial education departments, particularly in the Eastern Cape, the South African Democratic Teachers' Union (SADTU) has become a major player in political battles (Taylor, 2011).¹¹¹

¹¹⁰ It does not however, extend to Grade R children in community sites, even if they are registered Grade R providers (van der Berg et al., 2010).

¹¹¹ In a recent report for the National Planning Commission, the endemic dysfunction of the country's school system and the very poor schooling outcomes are shown to rest on a civil service dominated by weak capacity and a culture of patronage. *'These two factors are closely related, with nepotism and the appointment of unsuitable personnel further weakening government capacity, and driving officials, in the absence of the technical skills, to entrench their positions by building their own patronage networks. The solution to the first problem of poor capacity in government is technical. The solution to the problem of nepotism and corruption is political, and should be addressed within the political sphere. Unless both pillars are addressed South Africa cannot rise to the kind of developmental state that provides real opportunities for the poor'* (Taylor, 2011:3).

This chapter also highlights national government's difficulties in ensuring that its policies meet their intended goals and, in this case, in ensuring that the equity goals of financial allocation policies have their intended consequences. In large part the problem derives from the autonomy enjoyed by provinces in terms of the cooperative governance arrangements described. Nonetheless, the lessons are clear: the Grade R scale up was successful due to its relative simplicity: it targeted a clearly defined age group; it was a single service rather than a service package; only one department was responsible, limiting the number of diverse stakeholders with very different service mandates; it became embedded within the established schooling system; and there was a clear policy intention that Grade R was the first year of compulsory schooling, and concomitant public funding provision.

While international and South African data supports the necessity for having good quality preschools where the transition from home to school is fostered, it is obvious that unless preschools or Grade R classrooms are providing the preparatory cognitive skills required for the transition, their effect on later educational outcomes is minimal. Porteus (2004: 359) has the last word: *The danger is clear – while Reception classrooms in more resourced areas may thrive, Reception classrooms in more disadvantaged areas may be better-structured to serve the function of 'warehousing' than educational play. The question becomes, 'Is this a good first step – essentially, better than nothing?' Let us imagine 40 five-year-olds sitting in rows in an overcrowded classroom, 'taught' by a teacher who is not well trained in the pedagogy of educational play. Is this image better than the opposite danger – of children being left to their own devices to play and explore in a dangerous world? The question is not easily answered. If the human brain is developed through stimulation and creative engagement, we may be further disadvantaging children, and particularly those living in the deepest of poverty, through providing environments that are not conducive to these ends.*

Chapter Four

Financing increased support for early learning opportunities: a costing framework for the Pre-R year

Introduction

This chapter drafts a pre-R financing and investment model that will answer a question posed, hypothetically, by any Minister of Finance - “What will universal pre-R cost?”

The literature on costing early learning programmes is thin. Methods for estimating the cost of providing young children with access to high-quality early learning services seem often systematically biased to produce high estimates. For example, Carter et al (2008)’s South African ECD centre costing study calculated per child unit costs using the highest salaries found, and food and learning materials based on what ‘should’ be provided to ensure a minimum standard of care, rather than on what is actually provided. This was done intentionally: the authors claim that many centres under-pay staff and do not spend as much on learning materials and other running costs as they should, and therefore trying to replicate actual practices is likely to lead to under-estimating the required costs. Their costing study determined the value of resources that **should** flow to centres to ensure the provision of quality services, rather than maintaining the status quo. For this reason, it provides an important touchstone against which to assess this chapter’s costing model.

At other times, low cost alternatives are vigorously promoted and claimed to produce similar outcomes to their more expensive counterparts.¹¹² Multilateral organisations, such as the World Bank, have tended to encourage early childhood interventions in developing countries which are generally low cost, low quality and targeted, and it is commonly assumed that interventions can be home-based rather than centre-based, and that they are still likely to have the same or similar outcomes (Penn, 2004). More often it seems as if ECD analysis is structured to have an external group of experts provide a single “best policy” recommendation with a cost estimate attached. There is often no partial-funding alternative, or no clear method to phase in policies and costs. If the political leadership wanted to make

¹¹²For example, see Jaramillo and Mingat’s argument in Garcia et al, (2008). Some argue that the loss of quality of ECD in the direct transfer from the North is an outcome of the ‘under-resourcing’ of such initiatives in developing countries (Penn, 2004).

significant changes to the experts' recommended policies, the ECD stakeholder community need the information to debate such modifications and guide them in the most productive manner. A costing model will assist by providing the information required to manoeuvre within national resource constraints.

From a planner's perspective, once the best operational arrangements for the delivery of early learning services have been determined, adjustments based on different levels of resource mobilisation can be made, depending on the coverage targeted. If resources are not adequate, initial choices can be revisited and some of the characteristics or parameters of service delivery adjusted, without decreasing quality, to maintain a minimum level of coverage. It is critical to document these trade-offs so that the options can be explained to policy makers, providing real understanding of what could be gained by marginally increasing resources, or could be lost in terms of coverage and quality of services if the amount of public resources mobilised for ECD were too low (Garcia et al., 2008). Foremost amongst the hard trade-offs is the trade-off between coverage and cost: the second major design trade-off is between cost and quality. These trade-off are encountered not just in how much is spent per child, but in how the system is designed and implemented.

Traditionally, most cost estimates have been based on figures in official budgets, but there are alternative approaches that possibly provide more accurate cost estimates. The first involves doing field studies to try and capture actual total costs (Carter, Biersteker, & Streak, 2008). The second is to simulate the costs of a programme in a model, based on a range of assumptions about programme components and their costs, and the marginal cost of raising the quality or coverage of the system (van Ravens & Aggio, 2008). This chapter uses the latter methodology, but bases costs on recent observed data from the PETS survey (van der Berg et al., 2010). The cost analyses in this chapter are premised on the actual resources or ingredients currently used in ECD centres, not just aspirations of what the programme should entail (Levin & Schwartz, 2006). The unit costs are estimated theoretically, rather than empirically, using a normative model similar to the EFA costing exercises. These are then benchmarked against recent observed programmes, both locally and internationally, and the 'recommended' costs as detailed in the Carter et al (2008) study. **All costs reflect 2012 prices.**

For the purposes of constructing a model for costing a preschool class, there are no significant differences in the cost of providing a preschool class, its appropriate teaching methodologies, learning environment, trained staff and staff child ratios, for 3 year olds, 4 year olds or 5 year olds. It needs to be stressed, however, that this financing model is **only for the pre-R year**. The model is informed by the lessons unearthed throughout this

dissertation. Firstly, preschools improve children's learning potential. They provide a mechanism for intervention directly focused on child outcomes that is simple to monitor, easily understood by government and their target market. Secondly, the current mechanism of targeted means-tested subsidies is functioning well (van der Berg et al., 2010), and the model can be built upon. The model recognises that providing subsidies directly to families for ECD services depends on parents' appreciation of investments in early childhood, in other words, the strength of the demand for early learning opportunities. However, the model also recognises that providing non-age targeted subsidies to centres may entail perverse incentives to put very young children in centres to obtain benefits (Richter et al., 2012). Government is not (yet) in the business of childcare: this is an early learning intervention specifically for 4 year old children who have been shown to benefit from this type of service. Therefore, the model will provide a simple financing approach focused on one year of subsidies to providers. This rule-based funding is straightforward to track, monitor and hold those responsible for its delivery accountable. Thirdly, fees are a current feature of ECD centres, which provide important accountability mechanisms in the absence of institutionalised school governing bodies, as in the public school system. The model explicitly encourages private initiative and contribution, both in provision and payment for services, and does not present full state financing. Finally, the lack of available infrastructure through which to roll out a pre-R year is recognised as a key bottleneck. The model places the costs of infrastructure development in state hands.

The central enquiries of this chapter are the cost of financing '*universal*' preschool for all 4 year old children in the country, and the mechanisms by which to do so. In this dissertation, the term '*universal*' means universal financial access – any parent who desires a high quality early learning experience for their child will be able to afford such an experience. Universal is sometimes confounded with "uniform," but this thesis treats them as different. Under a universal access system, different children could experience early learning in many different settings, with different programmatic approaches, and different parents could pay different amounts. There are economic, political, educational and values aspects to such a definition of universal. Economically, it implies a more manageable public cost. Politically, it implies that families of all income groups can potentially benefit directly. Educationally, it recognises that deficiencies in early learning affect middle, as well as low income groups, and that both low and middle income children could benefit from better early learning opportunities. But importantly, while access may be universal, public support is targeted to relatively economically disadvantaged children.

The funding model presented is government-driven, costed in terms of child numbers and quality, and is pro-equity: it starts with, and prioritises, provisioning of services for the

hardest-to-reach children. The cost of services includes infrastructure and facilities, staffing, and overheads needed to deliver a basic package of quality services. Government funding does not mean that the state cannot raise funds from partners or facilitate provision by the private sector and non-governmental partners, as it does in health and education. One of the key points to emerge from the Children's Bill Costing Project given the dramatic funding shortfalls created in part by the new Children's Act, was the need for the government to make optimal use of the for-profit, the non-profit and voluntary sectors given its own limited resource capacity (Barberton, 2006).

Why is an analysis of costs so important?

For financial sustainability, three complementary aspects of cost play a role (Garcia, Pence, & Evans, 2008):

1. ***Priorities and competition among alternative claims on government budgets.*** Even with a favourable benefit-to-cost ratio, the fiscal envelope in the country may make a full-scale investment problematic (Alderman, 2011). This is particularly pertinent in South Africa where the reality of equitable share financing means that the merits of additional investment in ECD need to be restated every year to nine different provincial treasuries, as clearly demonstrated by the Grade R experience.
2. ***Cost-efficiency and the relation between spending and expected benefits.*** The relative efficiency of investments in early interventions depends not only on the responsiveness of the child to an intervention, but also on the cost of providing the necessary inputs. The search for efficiency in preschool is essential and worthy of careful analysis since its justification rests on the capacity of government to implement preschool activities that are more efficient than average (Hyde, 2006), and are not simply custodial care environments. To what extent are the benefits from preschool high enough to justify additional resource allocations? This issue can be tackled in two complementary ways. The first involves directly contrasting the benefits of preschool and the costs, and assessing whether the former is larger than the latter. This analysis, however, does not take into account the issue of resource scarcity. The second way looks at the effect of the competition for resources, and whether investing in preschool is a better strategy than investing in alternative education inputs.
3. ***The differing costs of various delivery modes.*** The early learning/developmental experience is the focus of this dissertation, which can potentially be achieved under a

variety of auspices. The key issue for this chapter on financing is what the different potential approaches imply for costs. Therefore the chapter will conclude with information pertaining to five key scenarios in respect to the state's options regarding pre-R:

1. Scenario one: Do nothing. Maintain the current status quo of provider subsidies to 0-4 year olds, and continue providing Grade R for 6 year olds.
2. Scenario two: Operate the subsidy model at full capacity, i.e. all registered and eligible centres receive the subsidy.
3. Scenario three: Expand the provision of pre-R in **community** sites towards universal access for pre-R.
4. Scenario four: Expand the provision of pre R in **public schools** towards universal access for pre-R.
5. Scenario five: Expand provision in a **mixture** of sites towards universal access for pre-R.

Key components of a South African model

The two dimensions of quality in early learning are '*structural variables*,' which delineate the ratio of children to staff, group size, learning materials and the physical environment; and '*process variables*,' which reflect the warmth of interaction between caregivers and children. While **process variables have the greatest impact on child development** (Shonkoff and Phillips, 2002), structural variables have been shown to correlate with the quality of interaction. In particular, the general education level of the caregiver, his/her specific training in ECD knowledge and skills, and compensation levels have been documented as important correlates (Brandon, 2004). These structural elements are the major cost-drivers, and therefore form the basis for the cost simulations. However, the literature repeatedly warns that **cost estimates provide no indication of the quality of the service provided**, as this is determined by the quality of interaction between the child and practitioner (Carter, Biersteker, & Streak, 2008). It is unlikely that reliable estimates of the relationship between costs and quality for preschools will be available for some time (Alderman, 2011).

There are eight key components of the costing model:

1. **Population Indicators.** Population sizes and the child age profile are important in calculating per capita expenditures. The population sizes, distribution between provinces, and the levels of provincial poverty have been taken from the SAIMDC.

Table 2: Provincial breakdown of datazones, child numbers and poverty concentrations.

Province	Eastern Cape	Free State	Gauteng	KwaZulu Natal	Limpopo	Mpumalanga	Northern Cape	Northwest	Western Cape	TOTAL
Total number of datazones per province	3172	1371	4257	4650	2703	1519	414	1819	2172	22077
Number of datazones in the lowest 50%	2440	807	552	2810	2110	915	127	1069	208	11038
Estimated total number of 4 year olds	144 233	62 340	193 568	211 438	122 907	69 070	18 825	82 711	98 762	1 003 854
Estimated number of 4 years olds in lowest 50% datazones	110 948	36 695	21 100	127 772	95 943	41 606	5775	48 608	9 458	501 904

This table clearly shows concentration of poverty in some provinces. For example, while Gauteng has a large population of 4 year olds (193 568 children), only 21 000 of these children reside in the poorest 50% of national datazones. In contrast 127 772 children out of a provincial total of 211 438 children in KwaZulu Natal reside in impoverished datazones.

- The second parameter is the **average staff-child ratio**. The critical difference for costing purposes in providing for children seven years and younger results from the need to provide at least the minimum adult to child ratios for children. In South Africa currently, a practitioner-learner ratio of 1:20 plus an assistant or 1:30 plus an assistant, are the recommended DSD registration requirements for 4 and 5 year olds.¹¹³ A recent Jamaican study¹¹⁴ recommended a 1:30 staff child ratio, but recognised that the critical issue is the training of the teacher in early childhood education pedagogy (Williams, Morrison, & Watson-Campbell, 2004). While the 2010 PETS survey found staff-child ratios of 1:11,¹¹⁵ well within the national norms (van der Berg et al., 2010), the smaller Carter et al (2008) case study of 21 Western Cape centres found very few centres meeting the required ratios. **The model will use both 1:20 plus assistant and 1:30 plus assistant ratios.**

¹¹³ Norms and standards for registration of ECD programmes by the DSD include requirements for minimum staff-child ratios of: 1:6 for children between the ages 1-18 months, plus an assistant; 1:12 for children between the ages 18 months-3years, plus an assistant; 1:20 for children between the ages 3-4 years, plus an assistant; 1:30 for children between the ages 5-6 years, plus an assistant (Giese et al., 2011).

¹¹⁴ The Caribbean Child Development Centre built a simulation model to show the costs and effectiveness of different types of early childhood development interventions in the Caribbean. The example presented here is taken from Jamaica.

¹¹⁵ On average, 2.7 ECD practitioners or teachers, and 2.4 administrative and support staff were employed in each of the registered facilities (van der Berg et al., 2010).

The numbers of staff that will be required in total by two separate scale-up phases (Phase One over 10 years and Phase Two over 20 years) are captured in Table 3. Two different Pupil-Teacher Ratios (PTR) are used for comparison. Importantly, these totals include the practitioners already in the ‘system’, which the 2001 Audit counted at 54 503. As it was not specified what aged children these existing practitioners served, this table gives the total staffing requirements for the pre-R year. **Practically this then is an upper bound on the numbers of teachers required.**

Table 3: Numbers of teachers and assistants required for different PTRs

	PTR 20 + 1 assistant	PTR 30 + 1 assistant
Total staff numbers: teachers & assistants	100 325	66 924

3. The third parameter to be set is the amount of **practitioner remuneration**. Teacher salaries are usually the core element of cost structures in education, and are often expressed in per capita GDP (pcGDP) units. The PETS survey revealed the disparities in salaries for practitioners of Grade R. Teachers employed by School Governing Bodies (SGBs) earn almost twice what community-based ECD practitioners earn, but are only paid about 42% as much as their public sector counterparts paid through Persal, the public sector electronic salary system. Such teachers do not appear less qualified than their Persal-paid counterparts.¹¹⁶ Practitioner salaries were found to be generally quite low, at an average of R2 170 per month for non-principals and R3 063¹¹⁷ per month for principals, similar to the averages found by Carter et al. (2008).

The Jamaica study mentioned above imputes salaries into the model that are not recommended “model” salaries, but reflect the current pay rates in Jamaica. They also cost all teachers and practitioners on the basis of *a full working day, all year round*. The logic for this is that although teachers work for 6 hours a day child-contact, time term time only, they are paid all year round. Internationally, early childhood practitioners generally work an 8 hour day child-contact time, all year

¹¹⁶ Van der Berg et al (2010) run a regression equation capturing all qualifications which shows a premium of almost R2000 for those being paid through Persal. This premium was about as large as the effect of fifteen years of additional experience. The authors thus question whether public salary levels are inflated compared to market demand and supply, as clearly, many people are willing to work in ECD facilities at far lower salaries.

¹¹⁷ Approximately R2600 and R3600 in 2012 prices.

round.¹¹⁸ The total number of hours that a full time teacher works per year can be assumed to be 1600,¹¹⁹ divided between effective teaching time or contact hours, and preparation time. Given the shorter days of preschool, 1600 working hours of contact time means that a teacher can theoretically run two ECD classes of 800 hours each in one year, and this is often priced into ECD models (van Ravens & Aggio, 2008). Holding two preschool classes a day is the norm in most South American countries (Berlinski, Galiani, & Gertler, 2009). This model will not cost a double preschool class (morning and afternoon class) per day. Internationally, teaching staff are often paid less in preschool than they are in primary education; on average, teacher salary in preschool would represent about 81% that in primary education (Hyde, 2006). In South Africa there is currently strong pressure to pay practitioners in community-based centres for children aged 0-4 'adequate salaries', which are compared directly to the salaries paid to Grade R teachers in community-based centres by the Department of Basic Education (Richter et al., 2012). A important caveat is worth repeating: paying someone a certain salary in no way guarantees either a certain quality level of care, or the sustainability of the centre (Carter et al., 2008). **The model will impute both an average of the current 'observed' salaries recorded by the PETS survey and Carter et al (2008) research, and the 'recommended' salaries detailed in Carter et al (2008), all in 2012 prices.¹²⁰ A Grade R teacher salary, is created from an average of the current Persal paid, subsidy paid and SGB paid salaries, recorded by the PETS survey.**

Table 4 clearly shows that both observed and recommended salaries of principals, teachers and assistants are low in terms of pcGDP.¹²¹ Teachers currently earn on average R2 217 per month, it is recommended that they earn R5 303 per month, and Grade R teachers earn on average R8 716 per month.

¹¹⁸ Including an assumed annual leave period of 4 weeks a year

¹¹⁹ 8 hours per day multiplied by 200 school days per year

¹²⁰ Salaries observed by both the PETS survey and the Carter et al (2008) study were similar, and so were first averaged together, and then a combined average of the teachers and principal salaries was created to be the 'observed' variable. The 'recommended salaries' are the highest salaries found and recommended by the Carter et al (2008) research.

¹²¹ An average of the International Monetary Fund, World Bank and UNESCO reported per capita GDP in purchasing power parity figures was used to create the value used in this model.

Table 4: Observed and Recommended salaries for Principals, Teachers and Assistants in ECD centres

	Observed salaries			Recommended salaries			Average Grade R salaries		
	Per month	Per annum	pc GDP	Per month	Per annum	pc GDP	Per month	Per annum	pc GDP
Principals	R3 426	R41 112	50%	R7 575	R90 898	111%			
Teachers	R2 217	R26 601	33%	R5 303	R63 629	78%	R8 716	R104 589	128%
Assistants	R1 894	R22 725	28%	R3 535	R42 419	52%			

Table 5 provides the total annual staffing costs for the two different PTRs and three different salary levels: those currently observed by the PETS survey, those recommended by the Carter et al (2008) study, and the average Grade R teacher salary recorded by the PETS survey. An 'average teacher' salary, for both observed and recommended variables, is created by summing and averaging out the salaries received by teachers and principals. Grade R assistants are assumed to earn half that of Grade R teachers.

Salaries currently recorded by the PETS survey are significantly less than those recommended by the Carter et al (2008) study, which are in turn less than those currently earned by Grade R practitioners.

Table 5: Total annual staffing costs of teachers and assistants required for different PTRs and at differing salary levels

	PTR 20 + 1 assistant			PTR 30 + 1 assistant		
Total staffing costs per annum R'000 000	Observed salaries	Recommended salaries	Grade R salaries	Observed salaries	Recommended salaries	Grade R salaries
	R2 840	R6 007	R7 874	R1 893	R4 005	R5 250

- The third parameter is the amount of resources needed to cover all centre costs other than practitioner remuneration (such as learning materials, consumables, food, rent); these other costs are expressed as a proportion of the practitioner salary cost. The PETS survey found the dominant expenditure component in ECD centres was salaries, making up just over half (51%) of all expenditure: 49% is spent on the remaining inputs (van der Berg et al., 2010). The Carter et al (2008) study found

salaries taking up 66% of all expenditure and 34% being spent on remaining inputs. **The model uses both the 51:49 and 66:34 ratios to understand their impact on unit costs. Thereafter, the 51:49 ratio will be used in all other calculations.**

5. **Capital costs.** The model uses the per child cost of establishing a non-private 'centre' as detailed in Carter et al (2008) to estimate the capital cost requirement for centres. This is a robust estimation, and was selected on the strength of the study's finding of both little difference in the per child cost of establishing any of the five types of centres analysed, and the problems associated with improving the value of private property, which thereby favour public provision of infrastructure (Carter et al., 2008).¹²² The estimate of the capital cost is simply the product of the per child cost of either a community centre¹²³ or a public school classroom,¹²⁴ and of the incremental number of such centres and classrooms to be built each year to accommodate the increasing number of children. Importantly, capital costs are amortised over their useful life of thirty years.¹²⁵

Table 6: Capital costs of community centres and public school classrooms per child over 30 years

Capital costs per child over 30 years	
Community centre	R268 (Carter et al. 2008)
Public School classroom	R889 (WCED)

A note here is appropriate: it is unclear why such a large difference in relatively similar construction costs should occur between community centres and public school classrooms. A bottom up assessment provides an estimate of approximately R572 per child over 30 years, exactly the average of the costs of establishment of

¹²² In Giese et al (2011)'s recent case study of 52 ECD centres in 3 provinces, 26 provided their services on community owned land, 7 operated from church buildings, 4 were occupying government owned premises (eg. schools, or local government land) and 15 operated from private premises.

¹²³ This establishment cost includes learning materials, internal and external play equipment, kitchen equipment, storage, and building costs. The building costs were estimated by multiplying R3 000/m² by 1.5 m² per child (ECD guidelines) plus 10% for additional space (toilets, kitchen and office). The 'per m²' cost estimate is based on costs for a centre built during 2008 (Carter et al., 2008).

¹²⁴ This establishment cost is based on an average provided by the Western Cape Education Department for Grade R classroom construction, written down over 30 years, assumed to be all inclusive of learning materials, equipment, etc. for 30 children per classroom.

¹²⁵ Costings often fail to amortise the costs of new buildings and capital equipment over their useful life and instead allocate these costs to the year of expenditure.

community sites and public school sites, and possibly a more likely situation. Interestingly, this has little impact in the final scenario analysis and, until more reliable data is available, these figures will have to suffice.

3. **Fees.** Almost all community-based ECD facilities impose fees. The 2001 ECD Audit revealed that 75% of ECD funding comes from private sources. ECD services and programmes fund their own infrastructure, maintenance and improvements from DSD subsidy income, user-fees and donations, and only a couple of provinces make a small contribution. The PETS survey found monthly fees were an average of approximately R170 in 2012 prices, across the three provinces, constituting about 43% of all centre income¹²⁶ (van der Berg et al., 2010). Data from the 2005 GHS reveals that 65% of African pre-schoolers pay annual fees of R450 or less, and 50% of White pre-schoolers pay more than R3000 a year (all in 2012 prices) (Burns, 2007). Most centres do not allow fee exemptions for children receiving the DSD subsidy (van der Berg et al., 2010).

The Diagnostic review is clear that mechanisms should be in place to enable parents to demand ECD for their children, to hold the state accountable should there be a failure of provision in terms of access and quality, and be able to pursue resolution through legal channels (Richter et al., 2012). However, the power of the user-fee model is not recognised: that the short route of accountability through parents' direct relationship with the providers of services to their children is a quicker, more effective mechanism, especially in the absence of established and legislated School Governing Bodies. Accountability to fee-paying parents puts pressure on service providers to provide a service perceived by parents to be of good quality and at relatively low cost. For this key reason, the PETS' report recommended retaining fees for registered community-based ECD facilities, even for the poorest facilities (van der Berg et al., 2010). **The model will assume the PETS finding of an average fee contribution of 43% of centre income.**

¹²⁶ Other studies have found similar fee levels. The Giese et al (2011) research found fees charged amongst Eastern Cape ECD centres ranging from R5 monthly per child to R75. In the North West site, the fees ranged from R20 to R60 monthly per child and in Western Cape the range was R120 to over R600. The Carter et al (2008) study found almost all centres charging fees, but these fees were seldom over approximately R150 monthly per child in 2012 prices. According to the 2001 ECD Audit, 50% of the surveyed ECD sites charged monthly fees of approximately R100 in 2012 prices or less on average, however, less than 30% of these ECD sites reported full fee payment. In contrast, in the PETS survey, half the facilities indicated that almost all children pay their fees, and another one-third that more than half of children pay (van der Berg et al., 2010).

4. **Subsidies.** The PETS survey revealed that current DSD provider subsidies make up approximately 41% of all centre income, and considerably reduce the outlays that poor parents have to make (van der Berg et al., 2010). Without these grants, many facilities in the bottom three quintiles may not be able to continue offering these services. This system of supporting ECD through transfers to registered private ECD practitioners in communities has achieved one of its main aims, of targeting the poorer segments of the population, both by providing them with grants and by attracting them into ECD. Although most facilities do not exempt such children from paying fees, the effect is nevertheless equitable, as the incidence analysis shows. Van der Berg et al (2010) thus recommend that the system of targeting subsidies to children through a means test should be continued. **The model will continue assuming subsidies total an average of 41% of centre income.**
5. **Overhead costs.** These system-level costs include administration, evaluation, technical assistance and support, planning and coordination, and quality promotion, and are included in the unit costs presented in this section. Such costs constitute about 10%-20% of the total unit costs of high quality ECD, with the difference depending on the level of salaries specified and the complexity of the required administration.¹²⁷ Much of these costs are for professional development, which are necessary to build quality in a system where there are a range of teacher qualifications and an expectation that individual teachers will improve their skills and increase their compensation over time (Brandon, 2004). **The model will use a 20% overhead cost for the first phase of scale up, given the more rural, and impoverished profile of the children. The second phase will assume overhead costs of 10%.**

Potential subsidy/financing mechanisms

Parents have important effects on their children, but little work in economics explores whether state investment in children's schooling opportunities crowds out or encourage parents' own investment in their children (Gelber & Isen, 2011). This is particularly pertinent in South Africa as historically this age group relied solely on private contributions to support its early learning prior to the DSD subsidy contributions coming into effect. In the OECD as a

¹²⁷ Implementation of the Children's Act began in April 2010 making it illegal for any ECD centre to operate without being registered with the DSD. ECD centres must register both as an "ECD programme" and as a "partial care facility". This dual registration process is not a once-off requirement: ECD centres are required to re-register as a partial care facility every five years, and all early childhood development programmes must be subjected to assessment and monitoring (every two years) (Giese et al., 2011). All this requires an expensive bureaucratic scaffolding.

whole, 82% of ECD provision is publicly funded, through a judicious combination of tax and benefits, whereas in North America, the UK and Australia the majority of provision is private. In the UK, 85% of childcare provision is private for profit care (Penn, 2004), but 94% of families now take up their entitlement to up to 15 hours per week of free nursery education for every 3 and 4 year old, and cutting back on that entitlement would politically be most unpopular (Moreno, 2011). In the US, it was found that between 66%-85% of children require some degree of subsidy to afford high quality ECD (Brandon, 2004).

There are a good few financing mechanisms to consider. A public ordinary schools approach would be a 100% public subsidy of the entire cost of early learning, for all children, regardless of family income, with subsidies distributed to the service providers, and discretionary fees levied by these providers. A higher education approach can be thought of as a combination of several mechanisms: a subsidy to providers of care that covers part of the cost of care, general grants to families to meet some of the remaining costs based on family income, and discretionary fees (Levin, 2009). This hybrid approach is similar to what is currently seen in South African ECCE: part of the cost of provision (10-55%) is covered by provider subsidies, the remainder is covered by fees and community contributions, and child support grants are paid directly to families.¹²⁸

A central question is whether a universal access policy should build on the current market-based/NGO approach to early care and education, or attempt to replace the market with a set of publicly provided services, on the model of Grade R. There are of course trade-offs between free access and a hybrid approach. Requiring parental payments may depress demand, and some children may remain in lower quality settings if the fees charged are too low to improve the functioning of the centre. A market approach provides greater flexibility and choice, while a public provision model may make enforcement of quality standards more straightforward. Since a school-based public provision approach may entail practitioners meeting primary school teacher certification requirements and receiving equivalent pay, it is more expensive. The evidence is out regarding whether that approach to standards and costs actually produces a greater quality learning experience (Brandon, 2004) ("Education White Paper 5 on Early Childhood Education," 2001). The uncertainties in the literature regarding the levels of formal education and the compensation required to recruit and retain well qualified staff suggest that it is desirable to have a wide range of experimentation to test out different approaches.

¹²⁸ This is roughly similar to the way higher education is financed in the US, with about 40% of total costs for all students covered by state appropriations or other institutional subsidies, and individual students pay the remainder with an income-related mixture of grants or scholarships, subsidised loans and personal or parental payments (Brandon, 2004).

The question for policy makers and advocates, then, is which is more likely to achieve the objective: a free service approach with equal access to the first step of education without any parental payment to every child,¹²⁹ for which costs may be untenably high as a *new* investment of public funds; or a hybrid approach that will have an imperfect guarantee of access and will require adjustments and improvements (Brandon, 2004).¹³⁰

South Africa's provider subsidy model currently in operation provides good examples of this latter approach. There is much provincial variability in some key features of the current provider subsidy system. Some, such as the threshold for eligibility for the means test,¹³¹ and the amount of the subsidy,¹³² are understandable given the different wealth profiles of the provinces. Others, such as the maximum number of days paid per annum,¹³³ the breakdown of the subsidy,¹³⁴ and the way in which the subsidy is calculated monthly,¹³⁵ seem merely to reflect administrative inefficiencies.

In terms of current state spending on ECD, the fiscal incidence is highly progressive: subsidies are well targeted towards children in the poorest quintiles (concentration coefficient -0.219) (van der Berg et al., 2010). Targeting is constrained, however, by the

¹²⁹ As currently is the case in South Africa's fee-free public schools which cater to the bottom three quintiles.

¹³⁰ Levin (2009) illustrates a good example of how the same amount of provider subsidy per child can produce three different outcomes, depending upon how it is designed, with a cost per child ranging from \$4,000 to \$6,000. In each case, the average annual cost of care is \$5,000 per child and a \$1,000 per child subsidy is given to every provider to improve quality and affordability. The provider subsidy could be used entirely to raise cost and, presumably, quality, assuming parents will continue to pay at the present rate. This would raise the cost to \$6,000 and keep parent fees at \$5,000. If affordability is the prime goal, the subsidy could be used entirely to provide a price reduction to families, from \$5,000 to \$4,000, yielding no increase in cost or quality of care. Or it could be used partially for quality improvement and partially for financial support. Costs would go up to \$5,500, but the provider subsidy would hold parent fees to \$4,500.

¹³¹ The means test takes into account the joint income of the child's parents: in the North West the threshold was R1 800 per month, the Western Cape is R3 000 per month.

¹³² Giese et al (2011) report the subsidy amount at R12 per child per day in North West and Western Cape and R15 in Eastern Cape. The desire to support as many centres as possible lay behind the WC decision not to increase the subsidy beyond R12. In contrast, the EC's decision to increase the subsidy amount to R15 per child has meant slower expansion.

¹³³ The Giese et al report that in 2010/2011 the maximum days ranged from 171 days per year in the Eastern Cape to 264 in the Western Cape.

¹³⁴ The subsidy was initially meant to provide for nutrition and other basic needs, and not for salaries. In practice, part of the subsidy was used to pay salaries of practitioners. Provinces have recently developed formulae specifying what proportions of the subsidy should be used for different purposes: In the Western Cape the split is 50-30-20 for nutrition, salaries and equipment. The Eastern Cape specifies a 40-40-20 split in respect of nutrition, administration including stipends, and stimulation programmes. Both provinces unsurprisingly report challenges with monitoring compliance with these formulae.

¹³⁵ In the Eastern Cape a proportion of the subsidy is allocated to both the number of registered children and actual attendance. The amount paid to Eastern Cape ECD centres therefore varies substantially between months despite the fact that core overheads remain fairly stable irrespective of rates of attendance. In contrast, ECD centres in the Western Cape receive the same amount every month as the subsidy is based on the number of children registered at the centre at the beginning of each school year, and monthly payments do not fluctuate with attendance (Giese et al., 2011).

availability of, and access to, registered centres. Many children, in fact the majority (>80%) of children in the poorest 40% of the population (Richter et al., 2012), are still entirely excluded from registered ECD provision (for reasons including there being no nearby registered centres and parents' belief that their children are too young), and thus do not feature in calculations of fiscal incidence. Even amongst registered facilities, roughly a quarter do not receive a government subsidy at present (Richter et al., 2012).

The level of suspicion towards private initiative by government departments should be noted, for this provides an insight into the drivers of political decision making. Giese et al (2011) report on the apparent reluctance on the part of officials to register new ECD centres, driven by the belief that new centres were unnecessary, and that they are being established as money-making ventures. In interviews with government officials, a sharp degree of suspicion was levelled at ECD service providers.¹³⁶ Carter et al (2008) challenge this by declaring that the 'mushrooming' of centres is more likely to be an indication of need rather than the actions of greedy entrepreneurs. This is confirmed by the PETS survey which found little direct evidence of large scale and systematic financial abuse of the subsidy system, despite the opportunities for such abuse existing.¹³⁷

Financial model

Recurrent cost of pre-R programme delivery per child per year

Table 7 presents the unit costs per child per year of provision at three different salary levels, using the observed PETS ratio of 51:49 (salaries to other centre costs). As the annual recurrent cost of programme delivery, the unit cost figure includes the total staff costs, consumable materials, and food needed per child per annum. Importantly, an assistant has been added to all scenarios, in line with the DSD registration standards for children of this age group. No overhead costs have been included to the unit costs of Table 7: these are only included in the unit costs of Table 9, when detailing the phase up process.

¹³⁶ In the Eastern Cape there was a strong resistance on the part of officials to register any ECD centre operating on private land because this was perceived as enriching an individual. In response to this, one research participant noted that *"Home based centres are completely discarded from the system of funding in Mbashe Municipality! The effort and passion projected by these women, some of whom have decided to offer their home space for the development of children in their communities, is completely ignored and devalued!"* (Giese et al., 2011: 48)

¹³⁷ The authors argue that one of the key reasons for this was accountability to fee paying parents. In addition, the recipients of funds are private organisations, well-informed and dependent on subsidies to keep their concerns going. Therefore DSD are under greater pressure to ensure that the **correct** funds are disbursed to these facilities (van der Berg et al., 2010).

Table 7: Annual Recurrent Unit costs per child

Annual Recurrent Unit Costs per child		PTR 20 + 1	PTR 30 + 1
		assistant	assistant
	Observed salaries	R5 547	R3 698
	Recommended salaries	R11 734	R7 822
	Average Grade R salaries	R14 413	R9 608

Given the differing salary levels between those currently observed in the sector, those recommended by the Carter et al (2008) study, and the average of those currently paid for Grade R teachers, Table 7 clearly shows how these impact on annual recurrent unit costs of delivery. In a class of 20 children, unit costs currently observed in the field are just over a third (R5 547) of what they would be should teachers and assistants earn what their Grade R colleagues currently earn (R14 413), and half those of the recommended salary levels of Carter et al (2008) (R11 734). An interesting benchmark here is the annual DSD subsidy per child at approximately R3 960. This is just over half of the unit costs per child in a class of 30 children with staff earning the levels recommended by Carter et al (2008), which is more or less in line with the PETS finding that subsidies cover on average 41% of centre running costs.

Table 8 shows four levels of coverage for hours of care, ranging from a narrow half-day, school year approach, to either a full-time, school year or full year approach. There are only 33 more days in a full year programme¹³⁸ versus a 200 day school calendar programme. This table shows that once costs are sunk upfront, the cost of running a programme for a full year versus a school year is not much more (R9 152 per child per year versus R7 822 per child per year should the 'recommended' salaries be paid with a PTR of 1:30 plus an assistant.) However, the issue of aftercare is a critical one, as almost all community-based sites offer a full day programme but, most preschool programmes, for example, Grade R, are only part day (Biersteker, 2010). The costs below for full day services will be an upper bound, as salaries have simply been assumed to double to create the full day scenario. This would not realistically follow. The case for government funding for full day as opposed to half day programmes may be harder to make, given the limited evidence uncovered in Chapter One as to its incremental benefits. However, when choosing between models of preschool provision, the added service of aftercare, crucial to many families, may be one which favours community centres.

¹³⁸ 233 days = 260 working days less 12 public holidays and 15 days annual leave.

Table 8: Unit costs for various levels of coverage

		School year (200 days)		Full year (233 days)	
		Half day	Full day	Half day	Full day
Observed salaries	PTR 20	R5 547	R11 094	R6 490	R12 980
	PTR 30	R3 698	R7 396	R4 327	R8 654
Recommended salaries	PTR 20	R11 734	R23 467	R13 728	R27 457
	PTR 30	R7 822	R15 645	R9 152	R18 304
Grade R salaries	PTR 20	R14 413	R28 825	R16 791	R33 581
	PTR 30	R9 608	R19 217	R11 194	R22 387

Provincial and National scale up of pre-R

Table 9 provides a summary of the provincial and national implications for scaling up access to early learning centres for pre-R.

The model generates the cost of providing the service to the population of children to be served, at the unit cost per child, at national and provincial levels. The model estimates the recurrent cost of ECD activities in the country, given the scenarios (coverage and type of service delivery), and unit costs. The modelled phase up is province specific. First, provision is targeted to the poorest children in each province as found in the poorest 50% of datazones. Secondly, phase two scales up to universal coverage of the pre-R year. Table 9 gives a picture of the specific provincial requirements in terms of staff numbers, unit costs for three different salary levels (Observed: Obs, Recommended: Rec, and Grade R (GR) and capital costs for either community centre (Com) or public preschool (Pub) establishment.

Children aged 4 years already in ECD centres are included in this scale up picture. It is unclear in which province the approximate 300 000 children already in ECD centres reside, and thus it was more appropriate to show the total scale up requirements for the approximate 1 000 000 of this age group. **This table thus provides an upper bound on expansion costs.** A PTR 30 plus one assistant has been used for simplicity's sake.

Overhead costs have been assumed at 20% of unit costs for the first phase of scale up, given the more rural, and impoverished profile of the children. The second phase assumes overhead costs of 10%. Both community centre and public classroom establishment costs amortised over 30 years have been shown.

The data in Table 9 reveal a few key points. Firstly, national resource requirements are not equal amongst the nine provinces: provinces with greater numbers of children are going to require greater resources. For example, Gauteng has approximately 193 568 four year old

children, in contrast with the 18 825 children of the Northern Cape. Secondly, provinces with greater numbers of poor children are going to require resources upfront in the scale up process. In the Eastern Cape, for example, a large proportion of children are in the poorest 50% of datazones (110 948 children out of a total of 144 233 children), which means that the province's scale up process will be significantly front loaded. Approximately 7 397 staff (teachers and assistants) will be needed in Phase One, versus the 2 219 staff required in Phase Two. In comparison, the Western Cape province needs only to accommodate 9 458 children in Phase One, with the remaining 89 304 children being in the wealthier 50% of datazones, and so accommodated in Phase Two. It requires a staff contingent of 631 in Phase One and 5 954 in Phase Two. Thirdly, the costs of infrastructure establishment in community preschools are approximately a third of that of public preschool establishment costs, as detailed in Table 6, although this may not necessarily be the case. Thus the main point to gather from Table 9 regarding capital costs, is which provinces carry the largest infrastructure responsibilities, not the absolute size of the figures. For example, should Gauteng select infrastructure provision in public schools, it needs to find R150 million for its scale up in Phase Two: community preschool infrastructure would cost it R45 million in the same phase.

Table 9: Provincial analysis of child poverty and phased scale up

Province				Eastern Cape			Free State			Gauteng			KwaZulu Natal			Limpopo			Mpuma-langa			Northern Cape			Northwest			Western Cape			TOTAL																
Total number of datazones per province				3172			1371			4257			4650			2703			1519			414			1819			2172			22077																
Number of datazones in the poorest 50%				2440			807			552			2810			2110			915			127			1069			208			11038																
Estimated total number of 4 year olds				144 233			62 340			193 568			211 438			122 907			69 070			18 825			82 711			98 762			1 003 854																
Estimated number of 4 years olds in poorest 50% datazones				110 948			36 695			21 100			127 772			95 943			41 606			5775			48 608			9 458			501 904																
PHASE ONE: Complete coverage in poorest 50% of datazones				Total staff required			7 397			2 446			1 673			8 518			6 396			2 774			385			3 241			631			33 460													
				Unit costs R'000 000		Salaries		Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR																
								492	1041	1279	163	344	423	111	236	289	567	1199	1473	425	901	1106	185	391	480	26	54	67	216	456	560	42	89	109	2227	4711	5787										
				Capital costs R'000 000		Centre type		Com		Pub		Com		Pub		Com		Pub		Com		Pub		Com		Pub		Com		Pub		Com		Pub													
								30		99		10		33		8		22		34		114		26		85		11		37		6		5		13		43		3		8		134		446	
PHASE TWO: Universal coverage				Total staff required			2 219			1 710			11 231			5 578			1 798			1 831			870			2 274			5 954			33 463													
				Unit costs R'000 000		Salaries		Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR	Obs	Rec	GR													
								165	286	352	104	221	271	685	1500	1781	340	720	884	110	232	285	112	236	290	53	112	138	139	293	360	363	768	944	2042	4319	5305										
				Capital costs R'000 000		Centre type		Com		Pub		Com		Pub		Com		Pub		Com		Pub		Com		Pub		Com		Pub		Com		Pub													
								9		30		7		23		45		150		22		74		7		24		7		24		3		12		9		30		24		79		134		446	

Built into the model is the ability to scale up over either ten or twenty years, building quality provision either relatively quickly or more slowly towards universal access. In the twenty year scenario, scale up of Phase 1 is completed over ten years, and phase 2 is completed over another 10 years. Table 10 presents the implications for child numbers of these two different time frames. Population growth is assumed at 1% annually, hence the small differences in total child numbers. In a 10 year scale up programme, 105 025 new children every year will access pre-R: in a 20 year programme only 55 260 new children will require access every year to achieve universal access in 20 years. In total just over a million children require access to pre-R.

Table 10: Scale up over 10 and 20 years

	Estimated number of 4 year olds accessing pre-R for the 1 st time per year	Total number of children accessing pre-R
Scale up over 10 years	105 025	1 050 254
Scale up over 20 years	55 260	1 105 193

What does it cost?

Tables 12 provides a summary of the simulation of five scenarios. For the sake of clarity, all parameters have been simplified. Children of 4 years old in South Africa can find themselves either in community sites, in public schools, or in no structured learning environment at all ("not enrolled"). Five options for the state are:

1. Scenario one: Do nothing. Maintain the current status quo of provider subsidies to 0-4 year olds, and continue providing Grade R for 6 year olds.
2. Scenario two: Operate the subsidy model at full capacity, i.e. all registered and eligible centres receive the subsidy.
3. Scenario three: Expand the provision of pre-R in **community** sites towards universal access for pre-R.
4. Scenario four: Expand the provision of pre R in **public schools** towards universal access for pre-R.
5. Scenario five: Expand provision in a **mixture** of sites towards universal access for pre-R.

The model assumes a PTR 30 plus an assistant for simplicity's sake. Salary levels are varying: community sites use current observed salary levels, which are then benchmarked against salary levels recommended by Carter et al (2008); public school pre-R use the PETS

average Grade R salary levels. Importantly, these scenarios exclude those children already in the system, in other words, those 4 year olds accessing an ECD centre are not counted again as requiring new access. The scenarios use the current centre coverage of 29.9% of 4 year olds for Scenario One, which is increased to 37% coverage in Scenario Two, if the estimated 25% of children in unregistered centres are included, and these centres become registered and their children subsidised. The scenario probabilities are depicted in Table 11 below. While Scenario 3, Scenario 4 and Scenario 5 all aim for universal access, 70.1% of 4 year olds in Scenario 1 and 63% of 4 year olds in Scenario 2 do not receive a pre-R year. The scale up of Scenario 3 will only require the new provision of infrastructure for 63% of the target group. Similarly in Scenario 5, only an effective 13% of the target population will require accommodation in community sites, given the existing community infrastructure already servicing 37% of the population.

Table 11: Scenario probabilities

		Scenario one	Scenario two	Scenario three	Scenario four	Scenario five
Coverage % of 4 year old children	Total enrolled % of 4 year olds	29.9%	37%	100%	100%	100%
	Not enrolled % of 4 year olds	70.1%	63%	0%	0%	0%
Establishment of infrastructure % for 4 year old children	Establishment % of community sites	0%	0%	63%	0%	13%
	Establishment % of public school sites	0%	0%	0%	100%	50%

Intuitively, the most costly operation of a preschool class is the “stand alone” class. A more cost effective option is for a preschool class to share overhead costs either by grouping a number of preschool classes together into preschool, or by attaching a preschool class to a primary school, or by including a preschool class in the operation of a day care centre (Williams et al., 2004).

Table 12 interacts the probabilities of Table 11 with the unit costs as shown in the first column of Table 12. The annual recurrent unit costs per child per year in community sites is R3 698, and R9 608 per child per year in public school sites, as shown originally in Table 7. The capital costs per child over 30 years (Table 6) are either R268 or R889 depending on whether the provision is in community or public school sites.

From Table 12, it can be seen that the baseline costs, without changing the current status quo, are R1 110 million in Scenario 1 – precisely the reported current DSD subsidy bill. Ensuring that all those who currently access ECD centres and are eligible are subsidised would cost incrementally more at R1 387 million. Should universal access be achieved through pre-R at community sites, the total annual recurrent costs would be R3 881 million, assuming capital expenditure is amortised over 30 years. Universal access through mixed provision would cost in the region of R7 159 million annual recurring cost, assuming capital expenditure is amortised over 30 years. The most expensive option would be for the state to assume complete provision within the public school system as per Scenario Four, which amounts to an investment of R10 534 million annually. This is not because the costs of establishing the infrastructure are terribly different. Nonetheless far more public infrastructure will be needed if none of the existing community infrastructure is leveraged, as shown by the 100% new public infrastructure requirement in Scenario 4 versus the 63% new community infrastructure requirement in Scenario 3 in Table 11.

Table 12: Summary of five scenarios

		Unit cost per child	Scenario one R'000 000	Scenario two R'000 000	Scenario three R'000 000	Scenario four R'000 000	Scenario five R'000 000
Annual recurrent unit costs	Unit costs in community sites	R3 698	R1 110	R1 387	R 3 712	0	R1 856
	Unit costs in public school sites	R9 608	0	0	0	R 9 645	R4 823
Capital costs over 30 years	Establishment costs of community sites	R268	0	0	R168	0	R34
	Establishment costs of public school sites	R889	0	0	0	R892	R446
Total annual recurrent expenditure			R1 110	R 1 387	R 3 881	R10 534	R7 159

Table 13 provides further evidence of the key role practitioner salary levels have on costs. The first row duplicates the Total Costs of Table 12 above, whereas the second row assumes equal establishment costs between community and public school sites of R572 per child per year for 30 years. Scenarios three, four and five change only marginally.

Table 13: The impact of different establishment costs on the scenarios

Establishment costs per site per child amortised over 30 years		Scenario one R'000 000	Scenario two R'000 000	Scenario three R'000 000	Scenario four R'000 000	Scenario five R'000 000
Total costs	Community sites: R268					
	Public school sites: R889	R1 110	R 1 387	R 3 881	R10 534	R7 159
	Community sites: R572					
	Public school sites: R572	R1 110	R 1 387	R 4 072	R10 220	R7 038

Clearly the difference between the two different modes of preschool delivery from a recurrent expenditure perspective is a function of the differing salaries of practitioners: those in the public system earn more. If salaries in community centres were pressured to increase in line with those recommended by Carter et al (2008), Scenario Three would cost R8 021 million as opposed to the R3 881 million using observed salaries, as shown in Table 14. Community provision (Scenario Three) remains the cheapest of the universal coverage options, but there are now slight cost implications in choosing between the modes of delivery.

Table 14: The impact of different Annual Recurrent Unit Costs per child in community sites on the scenarios

Unit costs		Scenario one R'000 000	Scenario two R'000 000	Scenario three R'000 000	Scenario four R'000 000	Scenario five R'000 000
Total costs	Community sites R3 698	R1 110	R 1 387	R 3 881	R10 534	R7 159
	Community sites R7 822	R2 348	R 2 935	R 8 021	R10 538	R9 229

Table 15 shows the national picture of the state's financial contributions to pre-R scale up, both in total and per year for the two different scale up timeframes. The provincial totals for each phase of scale up, as seen in Table 9, are summed and then smoothed to create an average increase over ten or twenty years. Inflation at an average annual rate of 6% and an annual population growth rate of 1% are assumed. The model assumes that 75% of children in this age group are eligible to receive the DSD subsidy, and are therefore included in the subsidy costs. Full public provision of establishment infrastructure is assumed, either in the form of community sites, or public school sites. Capital costs are amortised over thirty years to depict the cost per year.

Table 15: Total state contributions over two different scale up timeframes

		Capital costs R'000 000		Subsidy costs R'000 000
		Community site infrastructure	Public school infrastructure	
SCALE UP OVER 10 YEARS	Annual costs	R112	R371	R413
	Total capital costs over 10 years	R1 116	R3 709	
SCALE UP OVER 20 YEARS	Annual costs	R42	R138	R308
	Total capital costs over 20 years	R831	R2 762	

From this table, annual subsidies to ECD providers are in the region of R308 million–R413 million depending on the speed of the scale up process. In addition, the state has an annual financial responsibility for infrastructure of either R42 million and R112 million depending on the scale up timeframe should community centres be constructed, and R138 million and R371 million should public school classrooms be constructed. The total capital costs of infrastructure for the state over a ten year phase up programme would be R1 116 million for community sites and R3 709 million for public school sites. The total capital costs of infrastructure for the state over a twenty year phase up programme would be R831 million for community sites and R2 762 million for public school sites. Costs are only part of the picture however; scale up over 20 years may be a more realistic option given the low numbers of ECD practitioners currently available, and the relatively slow process of attracting, training and retaining a new cohort of practitioners.

What has not been made explicit in a table is the large private and community contributions to the annual recurrent cost of programme delivery. This amount obviously varies according to the salary structure of the ECD centre. The PETS survey found the DSD subsidy covering only approximately 41% of recurrent centre costs. Thus the private contributions in terms of fees and community contributions can be understood to be in the region of 50%-60% of total annual recurrent unit costs.

Global comparisons

The opportunities for testing these results by comparing them with empirical unit costs are limited because there are few observations of unit costs in the literature, and these vary enormously. Myers (2008) cautions that costs should not be too closely compared across countries, systems and programmes because of the many differences in inputs, benefits,

populations served, contexts, hours of operation, in-kind contributions, and other factors. Nonetheless, benchmarking is instructive when costing new provision.

Levin and Schwartz (2006) find annual per child preschool costs for 14 countries ranging from US\$64 in Indonesia to US\$7,881 (in 2001/02) in USA. There is one robust observation by Mingat (2006), who found that the average preschool unit costs in sub-Saharan Africa are 17% of countries' per capita GNP (pcGNP) (van Ravens & Aggio, 2008). This is far lower than the ratio of the Perry preschool programme¹³⁹ to the GNP in the United States. The unit costs of preschool as a percentage of average income reported in either the Perry preschool programme or Jaramillo and Mingat in Garcia et al. (2008), however, are higher than that in Uruguay: Berlinski et al (2008)'s calculations of the benefit-to-cost ratio for preschool investments infer a cost of only 5% of pcGNP (Alderman, 2011). Unit costs per annum in poor countries in Africa and Asia tend to be around US\$ 25 to US\$ 50, although lower unit costs are also found, the lowest being US\$10 in the case of a large programme in India (van Ravens & Aggio, 2008). Recent unit costs of a pilot preschool programme in Mozambique have been recorded as just under US\$30 for 12 months,¹⁴⁰ 3% pcGDP (Martinez et al., 2012).

Table 16 summarises a few of the more robust benchmarks available together with the annual recurrent unit costs per child generated by the model for all salary levels as presented on Table 7. The costing of Grade R, as recommended by WP 5, translates to a current cost of R7 733 per child per year in a public school classroom and R4 419 per child per year in a community centre which are 9.5% and 5.4% respectively of pcGDP. This is almost exactly the model's annual recurrent unit costs using the Carter et al (2008) recommended salaries. The model's unit costs using observed salaries dovetails with those of Uruguayan preschool programme, and is similar to the DSD's annual subsidy contribution per child. For this reason, it may be helpful to think of them as the basic costs of pre-R provision.

¹³⁹ For the Perry Preschool Project, the costs of preschool and attendant parent involvement would require \$13,000 annually (Bruner, n.d.), in today's costs, approximately R91 000.

¹⁴⁰ Dividing the programme's budget by the number of children attending without deflating and discounting, produces a cost of \$ 6.73 USD per child per month. During 2008 and 2009, each teacher received a stipend of \$10 USD per month from Save the Children, representing approximately **5% of the salary of a first-grade teacher**, who typically receives about US\$ 200 per month.

Table 16: Benchmarking centre-based ECD unit costs as a percentage of pcGDP

		ECD unit cost as a % of national pcGDP PPP	ECD unit cost as a proportion of domestic GDP in 2012 Rands
International benchmarks	Central and Eastern European countries	27.5%	R22 441
	US: Perry Preschool Programme	27%	R22 055
	OECD countries	19%	R15 505
	Average sub Saharan Africa	17%	R13 873
	Uruguay	5%	R4 080
	Community preschools West Africa	4.2%	R3 427
South African benchmarks	SA Primary School spend per pupil (UNESCO)	14%	R11 047
	Grade R in public schools (WP5: 0.7 X primary school spend per pupil)	9.5%	R7 733
	Grade R in community centres (WP5: 0.4 X primary school spend per pupil)	5.4%	R4 419
	DSD current annual subsidy per child	4.9%	R3 960
Model results	Model unit costs: Observed salaries, PTR 30+1	5%	R3 698
	Model unit costs: Recommended salaries, PTR 30+1	10%	R7 757
	Model unit costs: Grade R average salaries, PTR 30+1	12%	R9 608

Data on unit costs in both public preschool and primary education from four West African countries¹⁴¹ in the late 1990s, indicates that formal preschool is 70% more costly per pupil than primary education. Jaramillo and Mingat in Garcia et al. (2008) also report that the cost per pupil in *public* preschool programmes ranges from twice the cost of *community* programmes to five times as much, based on data in four other West African countries.¹⁴² Both the differences in community costs and the differences in costs per teacher may be indicative of differences in service quality. However, it is not enough that community-based programmes are less expensive to justify that they should be expanded. The benefits need to be considered. The data on the benefits of community-based ECD programmes are even scarcer than studies on the benefits of publicly funded preschools. In a study by Jaramillo and Tietjen (2001), Cape Verde and Guinea child outcomes were measured in terms of

¹⁴¹ Benin, Cameroon, Côte d'Ivoire and Niger. While there is some variation within this group of countries, on average, the unit cost of preschool is 0.236 times the per capita GDP, greater than the cost of primary education, which is 0.139 times the per capita GDP.

¹⁴² Cape Verde, Guinea, Guinea-Bissau and Senegal.

cognitive and physical development comparing public and community-based programmes. Despite the relatively substantial difference in per-pupil public spending, the study found little difference, on average, in outcomes, and in fact, the community-based programmes tended to outperform the publicly funded preschools. However, variance in the quality of both formal and community-based programmes is substantial. If community-based programmes are characterised by unit costs of about 5% of pcGDP, while generating potentially similar levels of outcomes for children, these programmes may not only be better than formal or traditional programmes, they are also justified in terms of the allocation of public resources because of the favourable cost-benefit ratios.

Table 17: Benchmarking practitioner/teacher salaries

		Per annum in 2012 prices	As a % of per capita GDP
International benchmarks	Primary school teacher: sub Saharan Africa (van Ravens & Aggio 2008)	R408 020	500%
	Primary school teacher: Average of 34 sub Saharan African countries (UNESCO 2011)	R334 577	410%
	Primary school teacher: OECD countries (UNESCO 2011)	R97 925	120%
	ECD practitioner salary as 81% of OECD primary school salaries (Garcia et al 2008)	R79 319	97%
Model results	ECD practitioner: Model observed salary	R33 856	41%
	ECD practitioner: Model recommended salary	R77 264	95%
	ECD practitioner: Model average Grade R salary	R104 509	128%

Table 17 benchmarks practitioner salaries. Teaching staff are paid less in preschool, on average, than in primary education, with salaries representing about 81% that in primary education (Garcia et al., 2008). In general, salaries depend on pcGDP and can range between 2 or 5 times pcGDP, with those in SSA being around 5 times pcGNP (van Ravens & Aggio, 2008). A tendency exists that the relative cost of teachers is higher in countries with a low level of economic development (UNESCO, 2011). Once again it can be seen in this table that the current observed practitioner salaries at R33 856 are significantly lower than those benchmarked at 81% of primary school teacher by Garcia et al (2008), which at R79 319 is more in line with salaries recommended by Carter et al (2008) at R77 264. This table

would benefit from having actual South African primary school teacher salaries against which to benchmark.

In general, expenditures on early childhood programmes in OECD countries range from about 0.2% to 2% of GDP. The European Union recommends its member states devote at least 1% of GDP to early childhood services. Countries with well-established preschool programmes (Germany, France, Sweden, U.S.) spend approximately 0.5-0.6% of GDP, or 10% of their education budgets on ECD (van Ravens & Aggio, 2008). Mexico, New Zealand, Brazil, and Poland also report public spending near this range (Levin & Schwartz, 2006). For South Africa, 0.5% of GDP would require expenditure on ECD amounting to approximately R14 billion, whereas 10% of the education budget would amount to approximately R20 billion. In the US, families with incomes under US\$18,000 spend nearly one quarter (23%) of it on childcare (University of Pretoria, 2007). The most commonly cited figure for assuring quality child care for 3-4 year olds is US\$8,000 annually, with a figure substantially higher for infants and toddlers. While there is no clear specification of 'affordability' in the literature on the economics of child care, a conventional standard, accepted in US federal guidelines, is that parent costs should not exceed 10% of family income (Brandon, 2004). A perverse equation exists in that care costs too little to achieve high quality, but it costs too much to be affordable for many parents.¹⁴³ The Swedish preschool fee is determined by the formula 3,2,1% of the combined household income for the first, second and third child respectively, and government subsidies compensate for low parental fees (University of Pretoria, 2007).

Conclusion

Most importantly, the nature of the preschool service is extremely complex, and this complexity is hidden in the simplistic cost estimates provided by the model. There is no evidence of any link between the costs of services and/or resources directed to centres and the quality of care given at the centres (Carter et al., 2008). Therefore selecting the most expensive option in the hope that it will ensure a quality service is pointless. Likewise, selecting a low cost option and expecting a positive impact on child outcomes is optimistic. Cost-effectiveness is only one of many criteria for prioritising investments. Options should be evaluated more from an understanding of the fiscal envelope of the country, the competing priorities existing in both welfare and education budgets, and the sustainability of the implementation model.

¹⁴³ Raising standards to a level where staff qualifications and staff-child ratios conformed to "high-quality" criteria could cost as much as a third of average take-home pay per child, pricing most middle-class families out of the market (Brandon, Maher, Li, & Joesch, 2004).

Secondly, the current provider subsidy model has shown enough implementation success to be built upon. The rule-based system with its small margins, private service providers, relative transparency in the value of the transfer, and accountability to parents, all play a role in keeping the system on track (van der Berg et al., 2010). The model incorporates this funding mechanism and calculates that **universal access to pre-R would cost the country annually between R308 million - R413 million in subsidy provision**, depending on the timeframe of scale up (Table 15).

However, there is a danger that the current model of expanding access by indirectly encouraging the NPO sector to grow and establish more centres, could increase and entrench existing inequalities. The Diagnostic Review argued that the NPO sector not only lacks the resources, management, and planning skills, but more significantly lacks the infrastructure and financial resources to develop infrastructure and centres where they are most needed, and to sustain these services (Richter et al., 2012). The alternative is a government focus on ensuring that those in greatest need of services receive them, thereby eroding inequalities. A neat theory of ownership and responsibility which informs the policy-maker of the correct degrees of public sector involvement in an activity like education is still missing (Archer 1994). In early learning, the theory is even less understood. Here, in addition to the cost of subsidies required by universal access, the model costs the establishment of infrastructure (Table 15). **Public provision of infrastructure could be through the establishment of public preschool sites, at a TOTAL cost of either R3 709 million or R2 762 million depending on the scale up timeframe, or community sites, at a total cost of either R1 116 million or R831 million depending on the scale up timeframe.** One key concern that requires more creative problem solving would be the extent to which the provision of new public infrastructure disadvantages those already providing ECD services from their own infrastructure.

At the upper bound of all five scenarios, total annual state and private costs are only R10 534 million for the provision of universal access in Scenario 4 (Table 12). This is half the international benchmark of R20 billion should 10% of the education budget be earmarked for ECD. Even if one were to add in all other earmarked state support for children:¹⁴⁴ the DSD ECD budget at around R1.2 billion per annum, the CSG budget of which about R1 billion per annum is paid to children under 6 years of age, and the total DBE budget of roughly R3.3 billion for Grade R per annum, this would still fall R5 billion short of this target. In terms of the other international benchmark (0.5% of GDP), the total costs of a pre-R year together with the aforementioned existing child-focused state expenditure would

¹⁴⁴ Excluding health care contributions, as the health budget is not detailed into specific child expenditures.

bring the country's expenditure on child development in line with its peers at approximately R16 billion annually.

Conclusion

The most powerful proponents of ECD in recent years are not parents, care providers, health care workers, teachers, or child development specialists – but economists. This development has been met with a fair amount of scepticism in some circles, but it effectively provides the field with considerable opportunity to strengthen its case.

Theoretically and empirically, over both the short and long terms, whether at small scale or at universal scale, in developed and developing countries: preschool interventions work. Direct intervention at the level of the child, as detailed in Chapter One, is a proven methodology for children of this age group, enabling them to become direct beneficiaries of state support, rather than support that is mediated through third parties. Paternalistic as this intervention may be, it is guided by a life cycle approach to learning: the case for violating the principle of consumer sovereignty is strongest at the preschool stages, and not at the later stages of formal schooling, where the argument is most often made (Heckman & Carneiro, 2003). The principles of equity and social justice, of particular concern to all South Africans, may better be served by investing in earlier stages of education.

The dire socio-economic context in which most children in South Africa find themselves, means that educational solutions to poor general schooling outcomes, such as preschool and Grade R, can only address part of the problem. A fair number of South African children arrive in formal school with their developmental potential considerably compromised. While not the 'magic bullet' for these challenges, early learning programmes nonetheless enable the majority of children to grow in a way that cannot be diminished or eroded by an uncertain future. It is recognised that ECD is 'a powerful equaliser,' because assistance is provided during a time when children are most able to make up for disadvantages carried over to them from previous generations.

The overriding refrain throughout this research has been the importance of a quality preschool experience. What exactly this means though is difficult to ascertain. Archer (1994:45) is eloquent in his observation: *'everything good about education, from the knowledge and talents necessary to produce it, to what it looks like when it is produced, defies formal measurement through the standard categories of bureaucracies.'* The same applies to the early learning experience: the crucial process variable of warm and responsive interactions cannot be costed nor measured. The Grade R scale up process highlighted

how easily quality provisioning can be side-lined by competing priorities. Should a pre-R year receive government support, quality provisioning, as gauged by a few key structural variables, should be its focus from the beginning.

This dissertation argued pragmatically that, since the precedent for centre-based provisioning has been set, as is currently evident in South Africa, then how much is this going to cost, and who will be targeted? It found that the children most likely to benefit from centre-based provisioning are those in the year prior to their entry into formal schooling, and thus modelled focused support to that age group. It found the total cost of a pre-R year to be modest across all universal access scenarios. In particular, it found the costs of community site provision to be the most attractive on a number of levels. Firstly, there is already an existing base from which to expand. Secondly, it would make sense from a cost containment and accountability perspective to retain practitioner employment within community structures, so as not to encourage the employer ambiguities that plague Grade R. And thirdly, community initiative in the early learning realm should be supported and developed. It is vital that government complements rather than crowds out the efforts of eager and motivated community members (van der Berg et al., 2010). The suspicion levelled at private and community initiatives from within state offices, as seen in the Giese et al (2011) research and the Grade R strategies of many provincial governments, needs to be challenged. The overriding aim of a pre-R year would be to leverage this state support by translating these resources into improved child outcomes, thereby improving the life time trajectories of 4 year old children.

The bottlenecks to increased preschool provision are few but important. Firstly, children do not vote. A silent non-electorate, their needs are always going to be mediated through adult agendas. A challenge for those lobbying on their behalf for a new early learning programme will be to retain the focus on child outcomes, as opposed to the competing goals of job creation or employment stability.

Secondly, time horizons are short. Politicians generally depend on achieving visible results quickly in line with the electoral calendar. General ECD programmes keep paying off over a lifetime, but only those payoffs expected to become visible quickly will tend to be taken into consideration. Should provision prioritise children in the poorest areas of the country, as recommended by this dissertation's phased scale up approach, there is a danger that the results, in terms of improved schooling outcomes, may be less attractive than if the less disadvantaged were focused on first. This first phase reality needs to be recognised by policy makers and researchers alike, and understood as the primary steps of a long term, high return investment.

Thirdly, the current supply of both practitioners and basic infrastructure is constrained. While the latter can fairly simply be resolved through commitment from the state coffers at the levels detailed in this thesis, the former requires longer timeframes for a trained cohort to develop. For this reason, a slower scale up timeframe is recommended.

And then finally, there is a key conceptual impasse about whether the responsibility for early learning programmes should reside in government's education or welfare executive functions. While one clearly implies a strategic national investment, the other implies a nanny-ing role. Undoubtedly one should always be able to attract significant flows of public revenue, while the other will remain side-lined and under-resourced, given the extent to which resource constraints drive national agenda priorities. It is thus of strategic importance that early learning programmes fall under the direct responsibility of the country's education sector.

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